



Québec, July 22nd 2014

Vancouver Board of Parks
and Recreation Administration
Office 2099 Beach Avenue
Vancouver, BC
V6G 1Z4

Dear Vancouver's elected officials,

I have heard that intense and emotional discussions have been going on in Vancouver over the last months about the fate of the belugas at the Vancouver Aquarium. I also understand you are about to take a decision on this delicate issue. I have spent the last 30 years of my life studying belugas in the St. Lawrence Estuary, Quebec, trying to understand this small isolated and endangered population, hoping what we learn will help to save them. Please allow me to share with you some of my thoughts and mixed feelings.

First, having spent thousands of hours spying on wild belugas, I have to admit that it feels awkward to observe them in an aquarium. There is no question that taking an animal such as a beluga from the wild to place it in an artificial environment is a quite dramatic intrusion into its life, and most probably into the lives of their relatives and companions left behind. Belugas, as several other species of cetaceans and mammals, are highly social animals. Even the best care and sophisticated enrichment programs can be not match to their complex social lives in the wild.

However, I have to admit that in my endeavour to "better understand to better protect" the St. Lawrence belugas, I rely, as most of my colleagues studying wild belugas and other whales and dolphins, on precious information learned over the last decades from research and observations on their captive counterparts. Some of this information helps us unveil fascinating aspects of their biology; some is also critical to our understanding and ability to protect these animals in the wild.

I recognize it is difficult to put these two appreciations in balance to decide whether we as a society want to maintain our tradition of keeping animals in captivity.

It is clear to me however that if we do keep them in captivity, we then have a great and challenging responsibility to provide the best possible care to the animals, to develop effective and needed outreach programs and to contribute through high quality science programs to the conservation of the species.

In 2007-2008, I was a visiting scientist at the Vancouver Aquarium. Not being a specialist in animal husbandry I was nevertheless able to appreciate the dedication of the animal care team. I was also impressed by the outreach programs of the education team, but even more so by the impact and fascination that the whales had on my three kids, even if they had had the chance to spend part of their summers on the water with me and wild belugas. It made me appreciate what it can do to kids that did not have the same opportunity! Finally, what I have learned from my observations of the belugas at the Aquarium during that year and from my ongoing collaboration with the Aquarium team have already been applied in our current conservation efforts to save the St. Lawrence belugas.

Again I don't know how this adds up in the balance but I have no doubt the value of what we have learned and continue to learn to conservation is real.

I hope you find these thoughts useful to your own reflection on the topic of the future of belugas at the Vancouver Aquarium.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Michaud", with a stylized flourish at the end.

Robert Michaud
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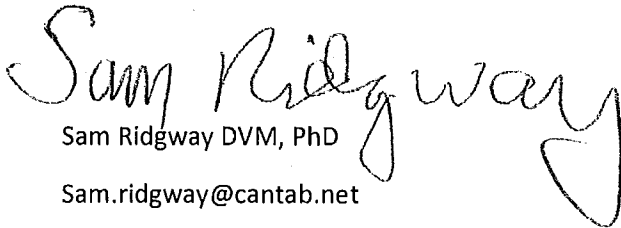
Letter of Support for Vancouver Aquarium cetacean conservation, display, and research.

This is a time when fishing kills about 600,000 marine mammals each year. Is this a time to prevent citizens from seeing these mammals so all people (even those who cannot go out to sea) can appreciate them and their environment? Canadian citizens kill several hundred belugas each year. Is this a time to prevent other citizens from seeing them and appreciating them up close?

Activists claim that captive whales and dolphins are suffering. Professionals caring for captive cetaceans watch for those rare instances when they are suffering and can provide remedies. I have worked with captive cetaceans for 52 years. Care of captive cetaceans is light years ahead of where it was even 25 years ago. Twenty-five years ago nearly all captures from the wild stopped in North America. Births sustained the populations. Only a few rescued, non-releasable, cetaceans such as the dolphins and porpoises at Vancouver were added. When sick, suffering mammals come ashore, most citizens appreciate that professionals can come to help.

Cetaceans in the wild suffer from natural predators, parasites, and disease, and from many human causes. Hungry animals come ashore stuffed with plastic garbage. Killer whales from the region that includes Vancouver have the highest tissue pollutant loads detected. Such pollution affects many marine mammals. We know these things because professionals have worked with both captive and wild marine mammals to help conserve them. Scientists must have access to captive as well as wild animals if we want to conserve them. Let me give just one example. Many activists fantasize that captive cetaceans cannot echolocate. In fact, echolocation was discovered from captive animals. The great majority of knowledge on cognition, echolocation, hearing, and sound production required trained cooperating cetaceans.

We have much to learn from captive marine mammals that can help in ocean conservation. Activists milk emotions while bombarding us with a delusion that all captive cetaceans are suffering all the time. Responsible citizens should look beyond the false claims and support Vancouver Aquarium.


Sam Ridgway DVM, PhD
Sam.ridgway@cantab.net

July 23, 2014

Dear Vancouver Parks Board Commissioners,

As an anthropologist who has lived and worked in the high Arctic for the past 14 years, I would like to offer you some viewpoints on why many people in the Arctic support the Vancouver Aquarium to have beluga whales in its care, and help you to see that the importance of these whales is not only a Vancouver issue, but one that is ultimately critical to maintaining healthy wild populations across the Arctic.

I am sure that you are very aware of the reasons that the belugas are at the Aquarium, but perhaps you are unaware of how vital these whales are to the future of the Arctic. Releasing the Aquarium's belugas does nothing to protect and preserve those in the wild – in fact, they have a stronger role in preserving their species by remaining at the Aquarium. The research that the Vancouver Aquarium is doing on whale vocalization is likely to prove critical to monitoring and preserving wild populations of both beluga and narwhal that are currently under stress from climate change, shipping, resource development and seismic testing in Arctic waters. People living in the small communities in the High Arctic depend on healthy marine mammal populations, and the research being conducted at the Aquarium will undoubtedly be one of the few tools that we will have to protect the wild populations and ensure a healthy ecosystem. I cannot begin to tell you how Inuit fear the loss of the precious animals through factors that are beyond their control, and how grateful we are as Northerners that institutions like the Vancouver Aquarium are as passionate as we are to ensure the survival of these species.

As an instructor of the Environmental Technology program in Pond Inlet, Nunavut, I was privileged to bring 13 young Inuit men and two Elders to Vancouver to work with the Aquarium on Arctic issues. For this group, who are so keenly aware of the issues facing the Arctic, it was clear that the belugas were an "entry point" for educating and creating awareness of the Arctic among visitors to the Aquarium. Love and respect for the belugas were the common ground, and the students and Elders were duly impressed by the obvious care, love and concern that the staff and volunteers had for the animals.

To say that Inuit, who rely on healthy populations of whales for their subsistence, were impressed by the Vancouver Aquarium speaks volumes as Inuit generally frown upon any animals, including pets, in human care. One of the most meaningful interactions came when my students noticed the look of amazement and wonder on the kid's faces as they watched the whales, and it occurred to the Inuit that this was truly how "southern" people formed their ideas about animals and the importance of conservation. Without a doubt, the whales at the Vancouver Aquarium are prompting the next generation of scientists, researchers and conservationists to become passionate about preserving these special animals.

I understand that this is an issue that will be presented to you in a way designed to get an emotional reaction, but please let the facts speak for themselves. Well-meaning, but uninformed people should never be allowed to emotionally manipulate you into making a decision that will most likely result in harm to the whales that are currently at the Vancouver Aquarium. They cannot survive in the wild and I am absolutely convinced that there is no place that will take better care for these animals than the

Vancouver Aquarium. And please remember if your ultimate goal is to do what is best for the whales, that they have an additional role and value in helping to provide understanding that can be used to preserve wild populations. Above all, please notice what my Environmental Tech students and their Elders noticed: the simple joy of children and families as the belugas opened their eyes to the importance of the ocean and the animals that live in it. I may not live in Vancouver, but I can guarantee that the belugas at the Vancouver Aquarium are well cared-for, among your best ambassadors, a fantastic way to connect your citizens to the issues of a bigger world outside your city, and Vancouver's contribution to the preservation of a critical species in the North.

Kind regards,

Shelly Elverum

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The Metro Vancouver Convention
& Visitors Bureau

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July 10, 2014

Mr. Aaron Jasper, Chair
Mr. Malcolm Bromley, General Manager

Vancouver Board of Parks and Recreation
2099 Beach Avenue
Vancouver, BC V6G 1Z4

Dear Mr. Jasper & Mr. Bromley:

The Vancouver Aquarium Marine Science Centre has been a valued member of Tourism Vancouver for some 30 years and is a vital part of our sales and marketing activities. In fact, our meeting planner and tour operator clients view the Aquarium as one of the top venues and experiences for their delegates and clients respectively. What's more, Aquarium passes are among the top three attractions products sold at Tourism Vancouver's Visitor Centre downtown.

As you know, the Aquarium is the largest attraction in Vancouver annually drawing hundreds of thousands of out-of-town visitors. Combined with Stanley Park, the Aquarium is one of the reasons visitors decide to spend more time in the city, ultimately benefitting businesses and the community alike. Vancouver's ability to sustain a vibrant tourism industry well into the future requires institutions like the Aquarium to enhance its offerings and manage its facilities to accommodate growth with a keen eye to benefits for both residents and visitors alike.

Tourism Vancouver whole-heartedly believes in the Aquarium's mission and long-term plans that include cetaceans. It is why we actively participated in the Aquarium's review and public consultation process, presented at Park Board meetings, and supported the management and staff on various initiatives including the recent expansion. This outstanding renovation enhances the Aquarium's appeal for all customer groups and exceeds expectations on all counts.

Aside from the importance of the Aquarium as a visitor attraction, Tourism Vancouver supports the Centre's role in the conservation of the aquatic world. From animal rehabilitation and the Ocean Wise sustainable seafood initiative, to research and community engagement, the Aquarium is essential to a healthy city and planet, and contributes significantly to Vancouver's Green City goals.

We also want to acknowledge the Aquarium's Board, staff and volunteers who have managed their institution in a way that has achieved a remarkable symbiotic relationship with its host community, Stanley Park. The Park provides a world-class setting that has greatly enhanced the 'aquarium experience.' The Park, as a place to experience nature, has also benefited from generations of locals and visitors who have come to the Aquarium and discovered a 'wilderness experience.'

.... 2



Based on the information provided as part of the public review process, related discussions and previous approvals by all levels of government for the Aquarium's expansion, we strongly encourage the Commissioners of Vancouver's Board of Parks and Recreation to continue to support the Aquarium's mission including its display and important conservation and research work with cetaceans.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bob Lindsay', with a stylized flourish at the end.

Bob Lindsay
Chair of the Board of Directors, Tourism Vancouver

cc: John Nightingale, Vancouver Aquarium



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July 22, 2014

Dear Parks Board Members (via email),

Re: The Vancouver Board of Trade's support for the Vancouver Aquarium

The Vancouver Aquarium Marine Science Centre is a unique facility in Canada, renowned for its rich mixture of conservation, education and scientific programming embedded within a world-leading visitor attraction. It has been a civic and conservation leader for more than 58 years, serving Vancouverites, British Columbians and visitors from across Canada and abroad.

As a self-supporting not-for-profit organization, the Vancouver Aquarium has an annual operating budget of just over \$30 million, 85 per cent of which is supported by visitor experience revenues — making it the only large, cultural organization in Canada that operates without subsidy from any level of government. The organization's collection of more than 50,000 animals plays an integral role in the attraction and engagement of its visitors, while providing support for important research, specialized skill development and marine mammal rescue programs.

In its review of the economic and social contributions of the Vancouver Aquarium in July 2013, MNP LLP reported that the Aquarium generates:

- More than \$43 million in direct and indirect annual economic output;
- \$59 million from out-of-town visitors directly attributable to the Aquarium;
- \$8.7 million in annual tax revenue;
- More than \$1 million in direct net annual revenue to the City.

The Vancouver Aquarium employs 450 staff, equating to 340 FTEs — a number that has doubled over the past 10 years. In addition, with more than one million visitors annually, 75,000+ members, as well as 1,000 volunteers who donate more than 130,000 hours per year, the Vancouver Aquarium plays a significant role in the economic engine of our city and this province. As the first LEED Gold and ISO 14001 certified cultural institution in Canada, the Vancouver Aquarium is also an important contributor to the City of Vancouver's goal to become the greenest city in the world.

With recent capital investments by both the federal and provincial governments of \$15 million and \$10 million respectively, its own cash reserves of more than \$5 million, as well as support from a number of local institutions and donors such as Teck, RBC, BMO, the Molson Foundation and others, the Vancouver Aquarium has just completed the first of three phases of its \$100-million revitalization — the single largest and most extensive investment in the organization's history.

An extensive planning, consultation and permitting process was undertaken for this project over the past six years, which included a majority vote of the Parks Board to grant the additional land within Stanley Park. That process included consultation with more than 4,000 Vancouverites and included public hearings. To date, the Aquarium has spent more than \$45 million of the total \$100-million budget.

The current process of review, initiated by the Parks Board, runs the risk of negatively impacting the Aquarium's future ability to continue to operate in a self-supporting manner and to conduct important work in ocean conservation, research and education. Further, the likely negative social and economic impact of this review to the city and province cannot be ignored.

For 127 years, The Vancouver Board of Trade has worked on behalf of our region's business community to promote prosperity through commerce, trade, and free enterprise. As Western Canada's most active and most engaged business



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organization, The Vancouver Board of Trade strives to enable and empower its members to succeed, grow and prosper in the global economy.

In this light, The Vancouver Board of Trade strongly supports the Vancouver Aquarium as a leading cultural institution in Vancouver and the organization's current business model, as it clearly bodes well for its successful operation and the important role the Aquarium plays in supporting the economic, cultural and green positioning of this city and province.

To be clear, given our understanding that the Vancouver Aquarium has a long-standing policy of no wild capture of cetaceans — that for 18 years no cetaceans have been captured unless for medical assistance — and that those currently in captivity are incapable of surviving in the wild, ***The Vancouver Board of Trade does not object to the current cetacean policy of the Vancouver Aquarium.*** Moreover, we are concerned that key scientific research and advances (specifically in the area of climate change impacts on the Arctic) might otherwise be lost by either releasing existing cetaceans, or by no longer coming to aid of cetaceans in need (per the current policy) in the years to come.

Yours truly,

Iain J.S. Black
President and CEO, The Vancouver Board of Trade



Three great streets.
One amazing neighbourhood.
DAVIE. DENMAN. ROBSON.

July 9, 2014

Aaron Jasper,
Chair,
Vancouver Board of Parks and Recreation
&
Malcolm Bromley,
General Manager,
Vancouver Board of Parks and Recreation
2099 Beach Avenue
Vancouver, BC V6G 1Z4
Canada

Re: Support for the continuation of Vancouver Aquarium best practices in managing cetaceans

Dear Messrs. Jasper and Bromley,

The West End Business Improvement Association (WEBIA) represents over 500 businesses and 197 commercial property owners on the commercial streets of Davie, Denman and Robson. The Board of the WEBIA had a recent discussion about the merits of the Vancouver Aquarium's conservation, research and education programs.

Specifically, there was an acknowledgment that they are a leader in managing cetaceans like belugas and dolphins. We understand that after 1996 the Aquarium would only support in their care whales and dolphins that were either captured before 1996, were born in an aquarium or were rescued from the wild but unable to be released under protocols established by government.

Their leadership also extends into the business community. More than a facility that supports research and education, it is an economic driver for the entire area. The Vancouver Aquarium is a popular institution within beloved Stanley Park. With over a million guests going through the facility each year, many West End businesses play a multiplier role in providing services ranging from transportation (eg bike rental) to food and accommodation.

The expansion plans for the Aquarium align wonderfully in scale and timing with the revitalization of the West End's commercial streets through the West End Community Plan (passed November 2013). There is optimism that the commercial streets of Davie, Denman and Robson will see new development to ensure it has a vibrant and dynamic mix of businesses and residents. We want the Aquarium to complete its expansion and revitalization,



Three great streets.
One amazing neighbourhood.
DAVIE. DENMAN. ROBSON.

which includes a Canada's Arctic Habitat for the beluga whales, so that together we can help the West End live up to its potential as one of the most iconic neighborhoods in Vancouver and an important driver of the local economy.

In summary, it was generally felt and understood that not only is the Aquarium a leader in many ways but that an expanded Aquarium would be a great partner in the community as we strive to revitalize the West End.

If you have any questions or would like to follow up directly, please do not hesitate to contact us directly.

Best Regards,

Stephen Regan,
Executive Director

cc: Board of Directors



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Original research article

The contribution of zoos and aquaria to Aichi Biodiversity Target 12: A case study of Canadian zoos



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ABSTRACT

The purpose of Aichi Biodiversity Target 12 is to prevent extinction of known threaten species, and improve the decline of the world's most imperiled species. Governments and NGOs around the world are actively working toward this goal. This article examines the role of zoos and aquaria in the conservation of species at risk through an in-depth examination of four accredited Canadian zoos and aquaria. Through site visits, interviews with staff, and research into the programs at each institution, this paper demonstrates that captive breeding, reintroductions, and headstarting projects are each a large component of conservation efforts. Interviews with zoo staff reveal strong consensus that zoo offer two critical components for species at risk conservation: space and expertise. Overall, this article calls for greater attention to the types of conservation activities occurring and the ways in which zoos are working together to protect and recover global biodiversity.

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1. Introduction

Human activities have catastrophic ramifications for the world's biodiversity, with habitat loss, overhunting, pollution, climate change, and other factors leading to the current imperilment of over 23,250 species around the world (IUCN, 2015). To mitigate this global crisis it is necessary that species be protected from further harm. Governments have recognized this need and signatories to the United Nations Convention on Biological Diversity have committed to a Strategic Plan for Biodiversity 2011–2020. There are 5 broad strategic goals and 20 targets, which are known as the Aichi Biodiversity Targets (<https://www.cbd.int/sp/targets>). Numerous countries have species at risk legislation, and 183 countries now endorse the global Convention on the International Trade in Endangered Species of Wild Fauna and Flora. However, government action alone will not be enough. There is a need for civil society and non-governmental organizations to actively assist with preservation of species at risk.

This paper turns attention to the role that zoos and aquaria (hereafter “zoos”) play in the conservation of species at risk. Moss et al., (2015) argue that zoos contribute to Aichi Target 1 through enhancing awareness of biodiversity (see also Conde et al., 2015; Gusset et al., 2014). Here it is argued that zoos also have a significant role to play in other Aichi Biodiversity Targets, specifically Target 12, which states, “by 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained” (<https://www.cbd.int/sp/targets>). Research conducted inside four Canadian zoos suggests potential for zoos to engage not only in the prevention of extinction, but also in the protection and recovery of imperiled species.

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¹ Prior Affiliation: Graduate Student, Master of Arts, Department of Geography, University of Toronto, Canada.

2. Literature review

Human beings have kept animals in captivity for thousands of years, with the earliest known zoo being a menagerie from 3500 BC in the ancient city of Hierakonpolis, Egypt (Rose, 2010; Patrick and Tunnicliffe, 2013). Captive animals during this time were seen as evidence of an individual's wealth and power. The first "modern zoo" open to the public was the Schönbrunn Zoo in Vienna, Austria, which was originally established as a private park by the Holy Roman Emperor Maximilian in 1569. Emperor Joseph II decided to make the zoo available to the public in 1765, beginning a chain of events that saw many formerly private zoos turn public, and new public zoological institutions come into being (Patrick and Tunnicliffe, 2013). Entertainment was the highest priority of these new public facilities.

Throughout the 20th century, many zoos began another evolution, shifting from an entertainment focus to one of scientific research and conservation (Hallman and Benbow, 2006; Patrick and Tunnicliffe, 2013; Rees, 2011). This shift was exemplified by the International Union of Directors of Zoological Gardens (IUDZG) 1993 World Zoo Conservation Strategy, which set out goals for zoos around the world, and asked that these institutions dedicate their efforts toward conserving nature (IUDZG/CBSG, 1993).

Today, it is widely known that zoos keep animals in captivity and that some zoos breed animals. In fact, this is often a source of public scrutiny and criticism, and, ironically, it can also be the source of increased visitation to zoos as baby animals can draw large crowds. Influential animal rights organizations, such as People for the Ethical Treatment of Animals (PETA), question the ethics of keeping animals in captivity, and characterize zoos as de-facto "prisons" for the animals on display (PETA, 2016). The treatment of zoo animals is also a matter of widespread public concern. In recent years, questions regarding improper exhibit maintenance, unsafe conditions for humans and animals, and enclosures too small for the animals have all been raised (Kirby, 2013; Mehaffey, 2016; Walters, 2016). This type of criticism puts zoos in a difficult position in terms of animal captivity and breeding, which are two activities central to the conservation mission of many zoo organizations.

Historically public zoos purchased most of their animals; when breeding in captivity did take place, it was generally for the purposes of increasing the number of animals on exhibit, or to sell excess animals to other zoos (Rees, 2011). However, today captive breeding is considered an important tool to maintain genetic diversity for small populations and avoid the extinction of critically at-risk animals (Conde et al., 2015; Lacy et al., 2013; Owen and Wilkinson, 2014). Indeed, one of the first conservation initiatives promoted by zoos was captive breeding, where rare or threatened animals are bred for the purpose of reintroducing their descendants back into the wild (Barrows, 1997). Captive breeding can also be used to create assurance populations, which maintain genetic diversity through *ex situ* populations in case of a catastrophic event severely depleting the wild populations (Conde et al., 2015; Grant and Hudson, 2015; Taylor-Holzer et al., 2013). Other motivations for captive breeding include a desire to reduce the number of wild-caught animals in zoos and to provide research opportunities that would be impossible to conduct on wild animals (Fa et al., 2011; Pfaff, 2010).

Often captive breeding is paired with either a reintroduction program or a headstarting program. With the former, a species is bred in captivity for the purpose of releasing it into the wild. Conversely, headstarting is defined as "a conservation technique for improving survival of species with high juvenile mortality" and involves taking eggs or young animals from the wild, overwintering them during their first year when mortality levels are generally highest, and then reintroducing them back into the wild once that high mortality period has passed (Sacerdote-Velat et al., 2014, 1). In both cases – reintroduction and headstarting – zoos are contributing to the conservation of wild populations. However, come criticisms of these practices exist. For example, it has been argued that the removal of wild animals for captive breeding only harms the wild population more, reducing its ability to recover on its own (McCleery et al., 2014). Zoo captivity is also thought to be detrimental to the health of animals, leading to abnormal behavioral development (Morin, 2015), and resulting in animals being unfit for reintroduction (McPhee, 2003; Robert, 2009). While new styles of exhibit design endeavor to address this problem through making zoo enclosures feel more natural (Fa et al., 2011), it remains difficult to train a captive-bred animal for life in the wild (Banks et al., 2002; Carbyn et al., 1994; Griffin et al., 2000; Jule et al., 2008). Fortunately, many recent reintroduction efforts are taking steps to improve captive-bred animal behavior through special conditioning programs prior to reintroduction (Jachowski and Lokhart, 2009; Reading et al., 2013; Vilhunen, 2006).

It is important to note that captive breeding with reintroductions is not the only ways zoo participate in conservation. Instead, zoo organizations participate in education and training programs, habitat protection projects, research, and species protection, both *ex situ* and *in situ* (Gusset and Dick, 2010). Worldwide there is an estimated 700 million visitors to zoos each year (Gusset and Dick, 2011). As a result, the potential for zoos to educate and promote conservation is often seen as the most important role that zoos can play in conservation (Moss et al. 2015; Packer and Ballantyne, 2010). Indeed, there is significant literature examining education programs at zoos, including the relationship between zoo visits and attitudes toward zoos, animals, and conservation (see, for example, Carr and Cohen, 2011; Moss et al., 2015; Roe et al., 2014; Schultz and Joordens, 2014; Tribe and Booth, 2003).

However, there is less academic research into the ways zoos engage in species at risk conservation, especially in Canada. According to Gusset and Dick (2011), the world zoo community spent (at least) an estimated \$350 million USD in 2008 on wildlife conservation. Many zoos spend conservation dollars on *in situ* and *ex situ* conservation projects (see Gusset and Dick, 2010). There is growing attention to the need for zoos to provide these projects to prevent biodiversity loss across the globe. Lacy et al. (2013) point out that zoos "have an expanding role and responsibility to contribute to species conservation amid this biodiversity crisis" (10). They argue that zoos must focus on both assurance populations at the zoo as well sustainable wild environments and populations for reintroduction programs (Lacy et al., 2013). There is no existing literature that

Table 1
Description of case studies; year of establishment and year of AZA accreditation.

Zoo	Date established	Date of AZA accreditation
Assiniboine Park Zoo	1904 ^a	2014
Calgary Zoo	1929	1978
Toronto Zoo	1888 ^b	1980 ^c
Vancouver Aquarium	1956	1975

^a Established in 1904 as the Winnipeg Zoo and became the Assiniboine Park Zoo in 2008.

^b Established as the Riverdale Zoo in 1888 and became the Metro Toronto Zoo in 1974.

^c The Metro Toronto Zoo held AZA accreditation from 1980 and 2012, but then lost that accreditation because the zoo's Board of Management voted to send zoo's elephants to a non-AZA accredited facility (Pagliano 2016). In 2016 the zoo was formally re-accredited by AZA.

specifically addresses Canadian zoos participation in biodiversity conservation. Thus, this paper asks two related questions: First, *how* do Canadian zoos engage in species at risk (native and non-native) conservation through wildlife management practices? And second, *why* are Canadian zoos engaging in conservation of species at risk? If countries are serious about achieving their Aichi Targets, such as target 12, then more attention must be paid to the myriad of ways that the extinction of known threatened species can be prevented, and ways that the population of those species most in decline can be improved and sustained.

3. Methods

The World Association of Zoos and Aquariums (WAZA) is a global federation of accredited zoos. The goals of WAZA include promoting inter-zoo cooperation as well as encouraging “the highest standards of animal welfare and husbandry” within their member zoos (WAZA, 2016). More than 330 zoo and aquaria organizations from over 50 countries are WAZA members (WAZA, 2016). North American zoos have a more specialized governing organization, the Association for Zoos and Aquariums (AZA). Similar to WAZA, AZA dedicates most of its energy to ensuring high standards in animal care/management, conservation, and educational opportunities offered through its member zoos (AZA, 2016a,b). Of the 233 facilities accredited by AZA, only seven are located in Canada.² This paper presents research and interview data from four of these institutions: Assiniboine Park Zoo, Calgary Zoo, Toronto Zoo, and the Vancouver Aquarium. These are largest and oldest zoos and aquaria in Canada.³ In total, there are about 100 zoos operating in Canada, but many of these are small wildlife collections (see Canadian Federation of Humane Societies N.d., 2017). There are 35 members of Canada's Accredited Zoos and Aquarium (CAZA) organization, which is a private charity operating in Canada since 1975 (see Canadian Association of Zoos & Aquariums, CASA, 2016). While the four case study zoos are not intended to be representative of all zoos in Canada, they are meant to provide an in-depth examination of CAZA and AZA accredited zoos in the country.

Canada was one of the first signatories to the United Nation's Convention on Biological Diversity in 1992, and the federal government ratified the treaty in 1993. There is a national Species at Risk Act, passed in 2002, that protects endangered, threatened, and special concern species throughout their range in Canada. An independent body of scientists, known as the Committee on the Status of Endangered Wildlife in Canada, assesses all native species to determine listing status. Today, there are over 500 species listed on the Species at Risk Act (see Canada, 2016). In 2010, Canada did commit to the United Nations Strategic Plan for Biodiversity 2011–2020, and is actively working toward the 20 Aichi Targets (see biodivcanada.ca). This is the first study to look at the role that Canadian zoos play in the conservation of species at risk, and it is also the first study to examine Canadian zoos from the inside – including site visits, interviews with zoo staff, and the collection of data on species at risk program occurring beyond the public eye (see Table 1).

A site visit was made to each zoo, which included interviews with zoo staff. Interviewees were contacted in a variety of ways. One co-author had previously worked at the Calgary Zoo and was able to directly contact the head of the conservation research department, who then arranged interviewees. At the Vancouver Aquarium and the Toronto Zoo, an email was sent to a known zoo researcher who helped arrange interviews. The Assiniboine Park Zoo requires researchers to go through the zoo's research review board, who evaluates the project and then determine participation. During the visits to the four different zoos, twenty-four interviews were conducted. The number of staff interviewed at each location was fairly consistent: seven at the Calgary Zoo, six at each Assiniboine and Vancouver, and five at the Toronto Zoo. The interviews lasted between twenty minutes to sixty minutes and each began with several general questions, as recommended by the pyramid method (Dunn, 2010). These questions were related to how long the individual had worked for the zoo, what their role

² Assiniboine Park Zoo, Calgary Zoo, Granby Zoo, Montreal Biodome, Toronto Zoo, Ripley's Aquarium of Canada, and the Vancouver Aquarium.

³ The zoos in Quebec were excluded in this study because of language barriers, but future research will examine the role that Granby Zoo and Montreal Biodome play in the conservation of species at risk. Also, the Ripley's Aquarium of Canada was excluded because it was only established in 2015.

Table 2

Description of case study institutions species collection.

Zoo	Total species	Number of Canadian species	Number of at-risk species	Number of at-risk Canadian species
Assiniboine Park Zoo	200	34	23	6
Calgary Zoo	130	29	29	10
Toronto Zoo	460	44	82	15
Vancouver Aquarium	935	712	Data unavailable	Data unavailable

was there, and how conservation came into their job. Questions then focused more on the role of the institution in general, followed by inquiries into the current protections for species at risk in Canada. (In the next section, interviews are referenced and/or cited with a short designation for each zoo. AZ is the Assiniboine Zoo, CZ is the Calgary Zoo, TZ is the Toronto Zoo, and VZ is the Vancouver Zoo. The number following the abbreviation indicates which interview is referenced, such that, for example, AZ-3 denotes interviewee 3 at the Assiniboine Zoo. In some instances, follow-up phone calls or emails were sent to the interviewees in regard to a specific detail or clarification. These are cited as “personal communications” throughout the paper.)

The site visits also included participation observation of species-at-risk exhibits and the collection of promotional materials accessible at the zoos. If available, we obtained annual reports and budget information from zoo staff. This information was also found through zoo websites, which were carefully analyzed for information about the zoo collection, especially species at risk, as well as information about the structure and organization (governing) of each zoo. While there is little existing literature about Canadian zoos, we analyzed reports produced by AZA, CAZA, and the four case study zoos to verify and support interviewee data.

4. Results and discussion

The four institutions vary in species collection size. As Table 2 illustrates, the Calgary Zoo is the smallest, with only about 130 total species. In terms of the number of native species, the Vancouver Aquarium dwarfs the other zoos with a total of 712 Canadian species inside its collection. Unfortunately, data on the number of International Union for Conservation of Nature (IUNC) listed species at risk and Canadian listed species at risk was not available for the Vancouver Aquarium. On its website, the Vancouver Aquarium features its conservation mission and explains its “animal protection program” for endangered species, namely the Oregon Spotted Frogs, Leatherback turtles, Killer whales, and rockfish (see Vancouver Aquarium N.d., 2017). And the website also features information about the research conducted at the zoo in relation to vulnerable and at-risk populations. Thus, while the exact number of at-risk species housed at the zoo is unknown, it is clear (from interviews and grey literature), that the Vancouver Aquarium collection does include Canadian at-risk populations. As Table 2 illustrates, the other institutions are home to numerous at risk species, and each also contain between six and fifteen Canadian (federally or provincially) listed species at risk.

Through the interview process and data collection, we learned that each institution is engaged in hands-on conservation of species at risk in three main ways: captive breeding, reintroduction, and headstarting programs. The results are organized into these subsections. While these zoos are also involved in education and research in relation to biodiversity conservation, that is not the main focus of this paper. The last subsection investigates why zoos participate in wildlife management for conservation of species at risk from the perspective of staff working at the four institutions.

4.1. Captive breeding

Since the earliest days of publicly exhibited captive animals, zoos have been breeding species in order to maintain their zoological collections (Rees, 2011, Interview CZ-7). While the practice of breeding animals for exhibit maintenance and education is still certainly occurring (Interview VZ-4), these four zoos appear to be moving toward restricting their captive breeding activities to focus on breeding animals for conservation (Interview CZ-7). Conservation-aligned captive breeding programs at the four study institutions are coordinated by outside organizations, mainly through international AZA Species Survival Plans (SSPs), the European Endangered Species Program (EEP), or through local government initiatives. Both the SSPs and EEP coordinate breeding efforts across multiple zoos through the use of studbooks, which keep track of parentage and determine the best breeding partners for individuals in a given species. Table 3 illustrates zoo participation in breeding, reintroduction, and headstarting programs. In the case of breeding programs, these refer to programs managed by either the SSP or EEP.

Beyond international breeding initiatives, all four zoos are playing a part in federally-based species at risk recovery efforts. In total, there are 33 federally listed species at risk in Canada whose current recovery strategy or management plan references the involvement of zoos. Of these 33 documents, six of them include a current captive breeding component⁴ and two other recovery documents mention the potential of captive breeding to assist in the recovery of the species⁵. Habitat protection is

⁴ Whooping crane (*Grus Americana*), Oregon spotted frog (*Rana pretiosa*), Blanding's turtle (*Emydoidea blandingii*), Massasauga rattlesnake (*Sistrurus catenatus*), swift fox (*Vulpes velox*), black footed ferret.

⁵ Sand darter (*Ammocrypta pellucida*) and Greater sage grouse (*Centrocercus urophasianus*).

Table 3

Zoo participation in breeding, reintroduction, and headstarting programs.

Zoo	Total species	Number of species in breeding programs	Number of reintroduction programs	Number of headstarting programs
Assiniboine Park Zoo	200	50	1	1
Calgary Zoo	130	45	5	1
Toronto Zoo	460	122	8	2
Vancouver Aquarium	935	8	2	0

usually the first objective in federal recovery strategies; indeed, the identification of critical habitat and mitigation of threats to it are mandatory components to species recovery in Canada (Canada, 2016). In cases like the six aforementioned species, populations in the wild were so low that simply conserving habitat and encouraging natural breeding in the wild would not be enough. The Vancouver Island marmot,⁶ for instance, experienced a 50% decline in its wild population from 1997–2007, 80% of which was caused by predation events (Canada, 2016). These dramatic decreases in the wild population spurred the need to begin a captive breeding and reintroduction program. Presently the Calgary Zoo and the Toronto Zoo continue to provide such programs (Interview TZ-3). In 2015 it was estimated that 250–300 marmots live in a handful of colonies on 28 mountains in British Columbia as a result of zoo-led recovery efforts (Marmot Recovery Foundation N.d., 2017).

Provincial recovery efforts are also beginning to recognize the potential of captive breeding in restoring species with extremely low populations. Seven of Ontario's published provincial recovery strategies or management plans include captive breeding. For two of these plans (piping plover⁷ and peregrine falcon⁸), captive breeding efforts have already been used to successfully increase population numbers, with the Toronto Zoo taking an active role in breeding peregrine falcons (Kirk, 2013; Ontario Peregrine Falcon Recovery Team, 2010). Five other recovery plans mention the need to evaluate whether captive breeding is possible for the species, and how it could be accomplished, (Morris, 2010, 2011; Ontario Ministry of Natural Resources, 2013a,b,c).

In Alberta, there are four current recovery strategies that include a captive breeding component⁹ (Alberta Environment and Sustainable Resource Development, 2012, 2013; Alberta Peregrine Falcon Recovery Team, 2005, Alberta Swift Fox Recovery Team, 2007). All four of these strategies have received input and participation from the Calgary Zoo, although the zoo itself is not currently involved in the breeding of northern leopard frogs (Interview CZ-2). However, the Vancouver Aquarium is the primary breeding facility for northern leopard frogs, and works with the Calgary Zoo on the northern leopard frog project in both Alberta and British Columbia (Interview CZ-2). While it is too early to judge the success of this program, the Vancouver Aquarium has successfully produced tadpoles and released thousands into the wild (Mangione, 2016).

Like Alberta, the government of British Columbia also has four provincial recovery documents that mention captive breeding¹⁰ (British Columbia Invertebrates Recovery Team, 2008, Canadian Oregon Spotted Frog Recovery Team, 2014, Northern Leopard Frog Recovery Team, 2012, Vancouver Island Marmot Recovery Team, 2008). Though the Puget Oregonian snail recovery team is still in the process of determining whether captive breeding is a viable strategy for this species (British Columbia Invertebrates Recovery Team, 2008), the other three species have current captive breeding programs occurring at the Vancouver Aquarium, the Calgary Zoo, and Toronto Zoo (Interview VA-3, VA-4, CZ-1, TZ-3).

While three of the four provinces in which the zoos are located have their own recovery strategy procedures, Manitoba does not. Manitoba introduced legislation mandating the development of provincial local recovery plans in 2012 (Manitoba Wildlife Branch, pers. comm., May 9 2016). However, due to the recent nature of this legislation and the time intensive process required to develop full recovery plan, the government of Manitoba has not yet been able to formally publish any recovery strategies, save for woodland caribou (Manitoba Wildlife Branch, pers. comm., May 9 2016). As they work on developing new recovery strategies, the provincial government has continued their former practice of adopting the federal recovery plans for any species occurring in the province (Manitoba Wildlife Branch, pers. comm., May 9 2016). Of these, two (the burrowing owl and peregrine falcon) include captive breeding components (Environment Canada 2012, 2015). The Assiniboine Park Zoo currently is assisting the provincial government with the burrowing owl captive breeding program by providing genetic analysis to recommend pairings and housing the owls during the breeding process (Interview AZ-5).

4.2. Captive breeding with reintroduction

While captive breeding is an important part of the role of Canadian zoos in species at risk protection and recovery efforts, most interviewees ($n = 20$) felt that zoos should also be involved in reintroduction efforts, and that “putting animals back” into the wild was a good fit for zoos (Interview CZ-6). All four of the case study institutions are involved in reintroduction programs (see Table 3), which focus almost exclusively on native species; as several interviewees stated,

⁶ *Marmota vancouverensis*.

⁷ *Charadrius melodus*.

⁸ *Falco peregrinus*.

⁹ The leopard frog (*Lithobates pipiens*), greater sage grouse, peregrine falcon, and swift fox.

¹⁰ Puget Oregonian snail (*Cryptomastix devia*), Oregon spotted frog, the northern leopard frog, and the Vancouver Island Marmot.

Table 4

Current reintroduction programs at the case study institutions.

Assiniboine Park Zoo	Calgary Zoo	Toronto Zoo	Vancouver Aquarium
Burrowing Owl	Whooping Crane Vancouver Island Marmot Greater Sage Grouse Burrowing Owl Swift Fox	Puerto Rican Crested Toad Eastern Loggerhead Shrike Vancouver Island Marmot Black-footed Ferret Trumpeter Swan Blanding's Turtle Wood Turtle Oregon Spotted Frog	Oregon Spotted Frog Rockfish Northern leopard frog

there is a local species focus for reintroductions due to the need to protect what is in their own backyards (Interview CZ-2, AZ-1), and because focusing on local conservation efforts is a more efficient use of resources (Interview CZ-2, TZ-1). For example, Vancouver's "protecting animal program" mentioned above includes only species native to Canada and includes reintroduction programs for 3 of these species (Vancouver Aquarium nd.). The one notable exception to the native species focus is the Puerto Rican Crested Toad¹¹ program at the Toronto Zoo, which not only involves breeding and reintroductions, but also a large amount of community outreach and education in Puerto Rico (Interview TZ-2). Table 4 illustrates the active reintroduction-based programs at the case study institutions.

The Calgary Zoo runs a high-profile whooping crane project. It is the only Canadian breeding facility and works in conjunction with US breeding facilities. Crane numbers hit their lowest point in 1941, with just 15 wild individuals found (Canada, 2016). Today, there are four wild flocks (Kelly Swan, pers. comm. May 10 2016) spread across the United States and Canada, three of which are now reproducing in the wild. The Wood Buffalo and Eastern Migratory flocks have both increased in population, to 329 and 105 individuals respectively (Buttler and Harrell, 2016, Whooping Crane Eastern Partnership, 2016). The Louisiana flock, which is fully made up of reintroduced individuals, sits at an estimated 46 individuals (Kelly Swan, pers. comm. May 10 2016); this year also saw the first crane chicks born in the wild in Louisiana since 1939 (McConnaughey, 2016). Without the participation of the Calgary Zoo it is not clear if the Whooping Crane story would be such an overwhelming success.

The Calgary Zoo also participates in an ongoing and successful swift fox project. Native to Alberta, Saskatchewan, and Northern Montana, the swift fox experienced rapid population declines following the settlement of the North American prairies, leading to their eventual extirpation from Canada in 1978 (Pruss et al., 2008). After reintroductions began in the 1980s, the swift fox was down-listed from "extirpated" to "endangered" in 1998 (COSEWIC, 2011). Further reintroductions and monitoring by the Swift Fox Recovery Team, of which the Calgary Zoo is a member, resulted in the swift fox being further down-listed to "threatened" in 2009 (COSEWIC, 2011). A search of the COSEWIC Species at Risk database found that the swift fox is one of only six species in Canada to have ever been down-listed; a direct result of successful reintroduction efforts (Interview: CZ-1).

Both the Calgary Zoo and the Vancouver Aquarium participate in the northern-leopard frog reintroduction project in British Columbia (CZ-2, VZ-3, VZ-4). In 2014, over 2000 captive bred tadpoles were reintroduced to the wild (Kootenay Conservation Program, 2014); however, monitoring the introduced populations will continue to occur for several more years before the program can be declared a success or not (Kootenay Conservation Program, 2014). The Vancouver Island marmot (Calgary Zoo and Toronto Zoo), Blanding's turtle (Toronto Zoo), and burrowing owl (Assiniboine Park Zoo) projects are all in similar situations; although some reintroductions have occurred, it is still too early to tell whether or not those efforts have been successful.

Not all reintroduction programs offered by these zoos have been success stories. The black-footed ferret reintroduction program in Grasslands National Park (Saskatchewan) carried out by the Toronto Zoo was one such effort. Formally thought to be extinct, a small population of black-footed ferrets was found in Wyoming in 1981 (Jachowski and Lokhart, 2009). The wild ferrets were then brought into captivity, bred in several facilities (including the Toronto Zoo) and successfully reintroduced to several different sites in the United States and Mexico (Jachowski and Lokhart, 2009). However, efforts to restore black-footed ferrets to Canada experienced some serious complications (Interview TZ-3). One year after the original group of ferrets was introduced to Grasslands National Park in 2009, plague arrived at the reintroduction site, devastating the prairie dog populations in the area (Interview TZ-3). The black-footed ferret diet is almost exclusively (87%–91%) black-tailed prairie dogs¹² (Barrows, 1997); thus, the dramatic decrease in the prairie dog populations led to the assumed demise of all of the reintroduced ferrets (Interview: TZ-3). Although staff from the Calgary Zoo, Toronto Zoo, and Parks Canada continue to survey the area for ferrets, none have been sighted since 2013 (Interview: TZ-3).

In other cases, even though a captive breeding program may be designed with a reintroduction component in mind, it is not always possible to restore the species to its native habitat. For instance, the widespread distribution of chytrid fungus, which releases a pathogen that destroys an amphibian's ability to respire through their skin (Skerratt et al., 2007), now covers

¹¹ *Bufo lemur*.

¹² *Cynomys ludovicianus*.

the entirety of the native range for the Panamanian Golden Frog¹³ (Interview VA-4). Both the Vancouver Aquarium and the Toronto Zoo are breeding populations of Panamanian golden frogs; however, the continued presence of the chytrid fungus in the animal's range means that no reintroductions of the species can take place until this threat has been mitigated (Toronto Zoo, 2016a,b). Although reintroductions may not always be possible using a captive-bred population, 25% of interviewees ($n = 6$) mentioned that it was still worthwhile for zoos to breed animals, as the captive assurance populations provide a reserve of genetic material in case of a catastrophic event in the wild populations.

4.3. Headstarting

While conducting the interviews, many of the participants ($n = 10$) explained how their zoo was involved in headstarting programs (see Table 3). The Toronto Zoo focuses their headstarting efforts on Blanding's turtles in the Rouge Valley National Park and wood turtles¹⁴ in other parts of Ontario (Interview TZ-2). Both of the Toronto Zoo headstarting programs involve partnering with other agencies, including Parks Canada and the Ontario Ministry of Natural Resources, to remove eggs from the wild, hatch and raise the young at the zoo, and then release the young turtles into protected sites (Interview TZ-2). In the case of the Blanding's turtle, headstarting was a high priority, as there were only an estimated six turtles remaining in the Rouge Valley area prior to the establishment of the headstarting program (Toronto Zoo, 2016b). The first headstarted Blanding's turtles were collected as eggs from stable populations in other parts of Ontario (Toronto Zoo, 2016b). After being hatched, the juvenile turtles spent two years in captivity while they grew to a large enough size to reduce the risk of predation (Toronto Zoo, 2016c). The first round of 10 headstarted turtles was released in the Rouge Valley park in 2014, and this project is anticipated to continue until 2024, with several more rounds of reintroductions planned and a monitoring program already in place to evaluate the success of the headstarting project (Jivov, 2014, Interview: TZ-2).

The Calgary Zoo and Assiniboine Park Zoo are both involved in headstarting efforts for burrowing owls in British Columbia and Manitoba respectively (Interview CZ-3, CZ-5, AZ-2, AZ-5). Though the Calgary Zoo's burrowing owl headstarting program is still in the planning stages, the Assiniboine Park Zoo has been involved with burrowing owl recovery since 2010, and is a founding member of the Manitoba Burrowing Owl Recovery Program (MBORP) (Assiniboine Park Zoo, 2016). The Assiniboine Park Zoo is responsible for housing the owls (in a non-public area) over the winter, in addition to conducting all of the genetic testing and deciding which headstarted owls should be paired together in order to foster the greatest possible genetic diversity (Assiniboine Park Zoo, 2016, Interview AZ-5). Unfortunately, the Manitoba burrowing owl project has experienced some setbacks since headstarting began, including several years where flooding wiped out the nest site areas (Interview: AZ-5). The relatively small number of possible reintroduction sites in the province is also an issue; if something happens to the existing reintroduction sites, there are few other places where it would be appropriate to release the owls (Interview: AZ-5).

4.4. Why participate –opportunities & challenges

Over the course of the interviews, the zoo staff members were asked why they thought their institution was participating in captive breeding/reintroduction programs. Responses to this question were generally in agreement with the idea that zoos have the space and the expertise to do so, as discussed by over half ($n = 13$) of the participants. In particular, staff from the Calgary Zoo brought up the existence of the zoo's Devonian Wildlife Conservation Centre (DWCC) (Interview CZ-2, CZ-5, CZ-7), which is located in a rural area outside of the city and is not open to the public (Calgary Zoo, 2015). This space is exclusively used for breeding animals for the zoo's conservation programs (Interview CZ-5, CZ-7), including animals that require large amounts of space, such as the zoo's herd of Przewalski's horses (Calgary Zoo, 2015). The existence of the DWCC increases the Calgary Zoo's ability to participate in breeding programs, and the amount of non-public space dedicated to conservation helps to distinguish them from other organizations (Interview: CZ-7).

Expertise was also felt to be a major advantage for zoos, many respondents ($n = 15$) citing experience with keeping and breeding animals as one of the most important factors to why zoos were involved with breeding and reintroduction programs. When captive breeding programs become necessary for the recovery of a species, it follows that the people in charge of coordinating the breeding program be experts on keeping animals in captivity. However, even though the people coordinating zoo captive breeding programs are experts, there are challenges associated with zoo-led breeding and reintroduction efforts that can affect the success of the programs.

First, a lack of space was felt to be a challenge by staff members from two of the case study institutions (Interview VZ-3, VZ-4, TZ-4). In particular, the non-exhibit space at the Vancouver Aquarium is quite restricted, and limits the ability of the facility to participate in large-scale breeding or reintroduction programs (Interview VZ-3, VZ-4). The institution's response to the restricted space problem has been to concentrate breeding efforts on smaller species (amphibians in particular) that are more easily housed; however, even these species programs are limited by space. While the aquarium is currently breeding both northern leopard frogs and Oregon spotted frogs, the facility staff would like to see the frogs kept for a longer period of time instead of being released as soon as they reach the tadpole morph (VZ-3, VZ-4). Tadpoles have a much higher mortality rate than adult frogs, mainly due to higher predation levels at the tadpole stage (Berven, 1990) and increased exposure to

¹³ *Atelopus zeteki*.

¹⁴ *Glyptemys insculpta*.

pesticide runoff, which can have detrimental effects on their development and behavior (Bridges, 2000). By holding off on the release of individuals until they had fully metamorphosed, survival rates would likely be much higher; nevertheless, the aquarium simply does not have the space or the resources to support large numbers of adult frogs (Interview VZ-3, VZ-4).

A second challenge is the need to address two contradictory components: the need to keep animals away from humans so that they do not become habituated (Griffin et al., 2000), and yet encourage the public to see conservation programs in action so that they are more inclined to support them (Interview: CZ-2, TZ-1). For instance, although the Calgary Zoo is the only Canadian breeding facility for whooping cranes, few members of the public are aware of this, as the whooping crane breeding takes place at the non-public DWCC. Whooping cranes can imprint on humans, which makes it very difficult to raise them in captivity while ensuring that they are still able to be successfully reintroduced. To combat this, whooping cranes at breeding centers such as the Calgary Zoo's DWCC are kept away from humans; the only contact they have with keepers is when the staff are dressed in crane costumes, a technique called "costume-rearing" (Urbanek et al., 2010).

Third, zoos that have the space and the expertise cannot save species at risk through headstarting or reintroductions if there is not habitat protect in the wild. Zoos have demonstrated that headstarting can be a valuable tool to increase the populations of species with high juvenile mortality rates, but equal emphasis must be placed on habitat preservation if the program is to succeed long-term (Heppell et al., 1996). Lastly, zoos are continually challenged by a lack of stable funding. Funding for conservation and research projects in general is a serious limitation for all four case study institutions. The interviews with zoo staff suggest that without more long-term funding from secure sources, it is highly unlikely that the case study institutions will be able to expand their involvement in conservation programs.

5. Conclusion and future research

Aichi Target 12 addresses the critical need to prevent the extinction of biodiversity and reverse population declines so that imperiled species can be sustained if not improved. This paper sought to examine how and why four AZA accredited Canadian zoos engage in wildlife management for the purposes of species at risk conservation. Using a case study approach and going inside the zoos to conduct research and interviews, we found that captive breeding, reintroductions, and headstarting projects are all a large component of conservation programming at the zoos. Each zoo is participating in 8–50 species breeding programs. These efforts are contributing to international breeding initiatives, such as the AZA Species Survival Plans and the European Endangered Species Programs, which coordinate breeding to maintain species' genetic diversity. The zoos, with the exception of the Assiniboine Zoo, are also participating in breeding efforts for listed Canadian species at risk. At both the federal level and the provincial level, governments are working with zoos to breed endangered and threatened species in zoos. This is a significant and understudied finding with regard to both species at risk policy and zoo conservation in the country.

All four zoos are also breeding wildlife for the purposes of reintroducing individuals into the wild – in hopes of increasing the wild population of the species. In total, the zoos participate in programs for 15 Canadian species at risk and 1 non-native species at risk. Zoos in Canada are working collaboratively across provincial and federal borders, engaging with governments and non-governmental organizations outside of their home provinces to protect and recover Canadian species. The successes of the whooping crane and swift fox reintroduction programs suggest that zoos could make a significant and critical contribution to the survival of wild native species in Canada, and should continue their involvement in captive breeding efforts for the sake of species recovery. Lastly, headstarting programs exist at the four zoos and are experiencing some success at reversing population declines in the wild. For example, the Blanding Turtle in Ontario may be brought back from critically endangered numbers by the Toronto Zoo's headstarting program (run in collaboration with Parks Canada and the Ontario government).

When zoos staff were asked why their zoo participates in conservation activities, there was strong consensus that zoos can offer two critical components: space and expertise. Many zoos have space on or off site to breed wild animals and/or keep them away from human beings such that human-imprinting does not occur during the headstarting process. Moreover, zoos are also staffed by wildlife experts who are able to assist in the breeding and reintroduction of animals. In this way zoos offer a unique setting for both the study and practice of wildlife conservation.

This paper has examined only four Canadian zoos. More research is needed to examine other zoos in Canada as well as other zoos throughout the world. It not clear the extent to which other accredited zoos in Canada, including the 31 other members of CAZA, are involved in biodiversity conservation, and comparative data would be beneficial to global the conservation society. There are 330 WAZA zoos globally –in countries like Columbia, France, Japan, Australia, Dubai, and Chile, for example. These zoos have committed to the conservation of biodiversity. It is likely that similar to Canadian zoos, these other WAZA member institutions are engaging in a myriad of critical conservation programs for native and non-native species at risk (see Gusset and Dick, 2010). We need a better understanding of the types of conservation activities occurring, and the ways in which zoos are working independently and together to protect and recover global biodiversity.

It has been noted that despite research into zoo's contribution to research and education, "zoos are still seen by some as being superficial, expensive, ineffective, and, therefore, indefensible" (Tribe and Booth, 2003, 66). This paper argues to the contrary. There can be little doubt that accredited zoos in Canada play a vital role in the recovery of species at risk. The work zoos are doing with captive breeding, reintroduction, and headstarting is expensive, but not superficial or ineffective. The Aichi Targets remain an ambitious achievement. The world is more than half way through the United Nations "decade on biodiversity", which was set as 2011–2020. Globally, governments and civil society must recognize that "zoo work still remains a grossly underutilized resource for the conservation of endangered species" (Mallinson, 2003).

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Scientist Statement Supporting Research in Marine Mammal Facilities

April 8, 2016

We, the undersigned members of the scientific community, wish to acknowledge the importance of marine mammals in zoos, aquariums, and marine mammal facilities, and express our support for research conducted at these facilities. We know that critical research findings have come from studies of dolphins and related species in managed care environments, which have provided the vast majority of what is known about their perception, physiology, and cognition. This includes both basic facts about these animals (e.g., echolocation and how it works¹, diving physiology², energetics³, gestation period⁴, hearing range⁵, signature whistles⁶, and so forth) and applied information such as how they react to environmental stressors⁷ and how to diagnose and treat their diseases.⁸

The benefits of such research extend well beyond the animals in zoological facilities. The interpretation of data from field studies is directly informed by what we have learned about the cognition and physiology of these animals in managed care settings. Moreover, because science is inherently a collaborative endeavor, research findings from these animals contribute to our collective understanding across the animal kingdom. Finally, research in managed care settings impacts conservation efforts by: (a) providing the baseline information necessary to inform conservation plans and practices (e.g., typical respiration rates, metabolic rates, gestation length, hearing range and thresholds, etc.), (b) documenting physiological and behavioral responses to environmental stressors such as sound and contaminants⁷ to inform population managers, and (c) developing and testing techniques and tools for assessing animals in the field.⁹

The advances that have come from research in marine mammal facilities could not have come from studies of animals in the wild. Field studies are crucial, however, many research questions are unsuited to discovery at a distance. Studies of pregnancy, birth, and fine-scale calf development require the type of close and consistent observation that is only possible in zoological settings. The hypothesis testing required for questions about cognition, perception, and physiology requires the ability to present animals with specific situations and challenges utilizing the necessary controls, consistency, and repetition that are impossible to achieve in the wild. Indeed, as with research in any discipline, a comprehensive understanding of these animals requires a combination of both in-situ and ex-situ studies; studies based in the wild and in zoological settings. This idea is neither new nor specific to marine mammals, but is critical to the way scientific discovery works.

Sincerely,

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A CRUMBLING CASE FOR CETACEAN CAPTIVITY?

A review of several key education
and conservation research factors



Vancouver Humane Society and Zoocheck

November, 2016

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INTRODUCTION

Two facilities in Canada, the Vancouver Aquarium (VA) and MarineLand Canada (ML), currently keep and display one or more species of cetaceans (the collective name given to whales, dolphins and porpoises), including individuals who were originally caught in the wild. The VA is a public aquarium located in Stanley Park, Vancouver. ML is a private business located in Niagara Falls, Ontario. Both facilities are accredited members of Canada's Accredited Zoos and Aquariums (CAZA), Canada's national zoo industry association.

This document reviews published VA and ML research papers in which captive cetaceans are the research subjects and the content of on-site cetacean shows, display materials/graphics and online information aimed at educating the public. This document is not a comprehensive review of the other kinds of activities or programs of either facility that are associated with non-cetacean species.

Those cetaceans that are most often kept in captivity are recognized as reasonably large, wide-ranging, deep diving, exceptionally active, highly intelligent, extremely social animals. This has led many people to question the keeping of cetaceans in zoo, marine park and aquarium facilities, especially in situations where the animals are confined in relatively shallow, spatially restricted, clinical environments and unnatural social contexts.

In step with broader trends, Canadian attitudes regarding the ethics of keeping cetaceans in captivity have undergone a significant shift in the years since the VA and ML first opened. In recent years, three separate surveys conducted by professional polling firms RA Malatest and Associates and IPSOS indicated that the majority of poll respondents did not support the keeping of cetaceans in permanent captivity and believed that the best way to learn about the natural habits of whales and dolphins is by viewing them in the wild.

These attitudinal changes have resulted in the veracity of zoo, aquarium and marine park claims regarding animal welfare, research, conservation and education being challenged in more formal ways by academics, independent experts and members of the animal welfare/wildlife protection and conservation community. A simple Google search on this topic produces a wide variety of materials offering critical assessments of cetacean captivity and specific arguments against captivity industry practices (See Appendix 1).

Zoos, aquariums and marine parks typically promote the idea that there is a legitimate need for keeping and displaying cetaceans in captivity. Amongst other things, they say that it can benefit wild cetacean populations.¹ But with each passing year, the number of marine mammal scientists, biologists and other experts who say there are few, if any, substantive benefits in keeping cetaceans captive increases.

Many individuals and organizations suggest that the keeping of live cetaceans in captivity has been rendered obsolete by technology. They point to the emergence of new, innovative display technologies as proof that there are now exciting, alternative ways for the public to learn about and even "experience" cetaceans. Orbi Zoo and LightAnimal's indoor whale watching, both developed in Japan,

are two examples of such endeavors. They provide opportunities for learning, including experiential learning, that do not involve live animals in captivity.ⁱⁱ

To date, the Vancouver Humane Society and Zoocheck are not aware of any compelling body of evidence demonstrating a need for keeping and displaying cetaceans in public display facilities for conservation research or education purposes. Nor are we aware of any substantive benefits resulting from cetacean captivity accruing to wild cetacean populations. We have concluded that the oft- stated goals of conservation and education made by zoos, marine parks and aquariums can be achieved, and in many instances are being achieved, in other ways that do not require the keeping of live cetaceans in captivity. It is our hope that this document will facilitate discussion and debate and help move Canada one step closer to better cetacean welfare and an informed assessment of whether these animals are appropriate for permanent captivity and public display.

Vancouver Humane Society & Zoocheck Inc.

RESEARCH: PRELIMINARY ANALYSIS AND COMMENTARY

Polls suggest that a large segment of the public considers captivity for cetaceans appropriate only if there are substantial educational and conservation (research) benefits. In response to this fact, zoos, marine parks and aquariums have routinely promoted the captivity of cetaceans, to one degree or another, as a practice with considerable educational and conservation value.

It may well be that the degree of public support for cetacean conservation, particularly for orcas, was enhanced by the early practice of keeping these animals captive, but we have long since passed that point, and cannot ignore that confining these animals in captive facilities has also led to unhelpfully anthropomorphic views and expectations.

While there can be a variety of ways in which zoological institutions pursue their “conservation” objectives, captive breeding and research are often cited and, in many cases, constitute the majority of the conservation activities of zoos, marine parks and aquariums.ⁱⁱⁱ Since it is not within the remit of this paper to examine claims that captive breeding of cetaceans is a viable frontline conservation strategy for any cetacean species, including those most often held in captivity, we will simply point out that a great deal has already been written about this subject and that claims regarding the efficacy of captive breeding for conservation purposes have been rigorously challenged.^{iv} This paper will instead look at research studies conducted by facilities housing cetaceans in captivity and, specifically, those published studies that are directly associated with the live display animals in their possession and/or in which captive cetaceans are the research subjects.

There is no denying that some zoos, marine parks and aquariums have engaged in studies in which captive cetaceans are the research subjects, and that a percentage of those studies have focused on husbandry-related challenges, including medical and reproductive issues. While these studies may have resulted in a general increase in understanding of some aspects of captive marine mammal health and wellbeing, their applicability to the wild cetacean context and claims that they make a substantive positive contribution to overall cetacean conservation is debatable. And the fact that some zoos, marine parks and aquariums do support some field studies of wild cetaceans suggests that the captivity and display of cetaceans is not required for them to pursue conservation objectives.^v

One initial question for evaluating the purported value of keeping cetaceans, or potentially other marine mammals, in captivity, for “conservation” purposes is: can these facilities demonstrate a benefit (or even applicability) of their studies, or breeding programs, to the wild cetacean context?^{vi} Zoos, marine parks and aquariums in North America have long claimed to provide important education and conservation benefits without providing a clear measure as to the veracity of their claims. Certainly captive breeding and release programs can benefit a small range of endangered wildlife species, but that does not apply to the cetacean species most commonly kept in captivity or to most other marine mammal species.

This report identifies and analyzes the original empirical research papers on cetaceans in captivity produced at the VA and ML which were published in peer-reviewed scientific journals. A citation analysis of each study was conducted. Citation analysis is a widely-used standard method of determining the impact of specific articles, authors, and publications. Using citation analysis to gauge

the importance of one's work, can be a significant part of the academic review process. Although citation analysis can have its limitations, it can be a valuable tool for assessing whether the research in question is contributing to the basic scientific literature and it can be a critical initial filter through which any research paper must pass in order to have any impact.

To achieve some level of impact, studies should be published in reputable peer-reviewed scientific journals and should be, at the very least, independently cited by other authors. Citations are important because they index the “reach” of scientific findings, that is, the contribution made to the overall topic at hand and, therefore, the potential, for application to conservation.

Method

In order to identify original peer-reviewed papers from each facility (VA and ML), their respective web pages were first reviewed. A search was then conducted of the terms “Vancouver Aquarium” and “Marineland” on Web of Science, one of the most widely used standard publication databases. Web of Science was also searched for specific authors who were associated with each facility. Moreover, in order to ensure papers were not overlooked, the reference section of each paper was reviewed to identify any other authors and papers which might derive from each facility.

In order to confirm the findings in Web of Science, two additional popular databases, Scopus and GOOGLE Scholar, were searched. Conference abstracts were excluded as they are not full papers and there is no reliable way to measure their impact.

Peer-Reviewed Research on Captive Cetaceans at Vancouver Aquarium

In order to identify original peer-reviewed scientific papers from VA, the list of publications posted on their website at <http://www.vanaqua.org/act/research/publications> was first reviewed. A search for the term “Vancouver Aquarium” was then conducted in the Web of Science database (with no date limits). An additional search on Web of Science was conducted for the authors of those papers that were found with no further results.

In order to conduct a citation analysis, Web of Science was used to count peer-reviewed original scientific papers citing studies conducted with captive cetaceans at VA. In cases where no citations were found by the Web of Science, findings were confirmed with Scopus or GOOGLE Scholar.

Results

The number of peer-reviewed scientific papers on wild cetaceans supported by the VA stands in contrast to the more limited number of in-house studies of captive cetaceans. Using the methods above, **13 peer-reviewed original scientific papers** using captive cetaceans at VA were identified over the past 30 years.

- 1) Piercey RS, Rechsteiner EU, Battaile BC, Trites AW (2013) Seasonal changes in the food intake of captive Pacific white-sided dolphins (*Lagenorhynchus obliquidens*). *Aquatic Mammals* 39(3): 211-220.

Studied feeding records for 5 captive dolphins at VA and found that they eat about 7% of their body weight daily. Focus on records for one dolphin showed some seasonal variation in intake.

This paper was cited **once** in Web of Science in a paper on captive dolphin welfare.

- 2) Reichsteiner EU, Rosen DAS, Trites AW (2013) Seasonal resting metabolic rate and food intake of captive Pacific white-sided dolphins (*Lagenorhynchus obliquidens*). *Aquatic Mammals* 39(3): 241-252.

Measured resting metabolic rate and food intake in three dolphins at VA over twelve months. Resting metabolic rate did not change seasonally but food intake increased in the autumn months. Authors hope this data will help them to develop bioenergetics models of the energetic needs of wild dolphins.

Web of Science search yielded **two** citations in papers on metabolism in captive cetaceans.

- 3) Rosen, DAS and Trites, AW (2013) Resting metabolic rate of a mature male beluga whale (*Delphinapterus leucas*). *Aquatic Mammals* 39(1): 85-88.

Conducted repeated measurements of rates of O² consumption from one mature male beluga whale at the VA, yielding resting metabolic rate, which was found to be lower than expected.

Cited **twice** in same papers as above.

- 4) Frouin H, Loseto LL, Stern GA, Haulena M, Ross PS (2012) Mercury toxicity in beluga whale lymphocytes: limited effects of selenium protection. *Aquatic Toxicology* 109: 185-193.

Blood samples from four captive beluga whales at the VA were used to create *in vitro* assays of lymphocyte function compared with that of wild belugas. Found that selenium had protective effects on lymphocytes in vitro. Authors attempt to relate these results to health of wild beluga populations.

Web of Science yielded **12** citations, **four** of which directly relate to wild cetaceans.

- 5) Leung ES, Vergara V, Barrett-Lennard LG (2010) Allonursing in captive belugas (*Delphinapterus leucas*). *Zoo Biology* 29: 633-637.

Described allonursing in captive belugas at VA.

Cited in **one** paper on wild beluga whales in Web of Science.

- 6) Vergara, V, Michaud, R, Barrett-Lennard LG (2010) What can captive whales tell us about their wild counterparts? Identification, usage and ontogeny of contact calls in belugas (*Delphinapterus leucas*). *International Journal of Comparative Psychology* 23: 278-309.

Examined mother-calf contact calls recorded from a captive beluga social group at the VA and used the findings to generate predictions about usage in the wild. Verified these signals as contact calls in the repertoire of wild beluga in the St. Lawrence estuary.

GOOGLE Scholar yielded **two citations on wild** cetaceans, **two on captive** cetaceans, **one review** paper and **one dissertation**.

- 7) Vergara V, Barrett-Lennard LG (2008) Vocal development in a beluga calf (*Delphinapterus leucas*). *Aquatic Mammals* 34(1):123-143.

Studied the vocal development of a male beluga calf for three years.

Web of Science yielded **two papers on captive** cetaceans, **four on wild** cetaceans, and **two review** papers on cetaceans.

- 8) Maggi RG et al., (2008) *Bartonella Henselae* in captive and hunter-harvested beluga (*Delphinapterus leucas*). *Journal of Wildlife Diseases* 44(4): 871-877.

Blood samples from captive belugas at VA and wild belugas were analyzed for *Bartonella* pathogen. Two different strains were found in 78% of the sample, including captive animals.

Web of Science analysis yielded **four** veterinary review papers mentioning cetaceans and **one** methodology paper (on bone biopsies) on cetaceans.

- 9) Erbe C (2008) Critical ratios of beluga whales (*Delphinapterus leucas*) and masked signal duration. *Journal of the Acoustical Society of America* 124(4): 2216-2223.

Investigated masking thresholds of vocalizations by a captive beluga whale (Aurora) at VA.

Web of Sciences yielded **15** relevant citations, **four** of which were studies of wild cetaceans, **five** studies of captive cetaceans, and **six** reviews, book chapters and conference reports.

- 10) Erbe, C (2000). Detection of whale calls in noise: Performance comparison between a beluga whale, human listeners, and a neural network. *The Journal of the Acoustical Society of America* 108.1: 297-303.

Examined masking of captive beluga vocalizations by white noise and comparison to human and a neural network model.

Web of Science yielded **19** citations, with at least **nine** original papers clearly relevant to wild cetaceans, and one to captive cetaceans.

- 11) Erbe C, Farmer DM (1998) Masked hearing thresholds of a beluga whale (*Delphinapterus leucas*) in icebreaker noise. *Deep Sea Research* 45: 1373-1388.

Masked hearing threshold was measured in a beluga whale at VA. Authors hope findings are relevant for noise in the natural environment.

Web of Science yielded **27** original articles on wild or captive cetacean hearing and the effects of noise. Most of these were the same as the 19 citing articles noted above. Many of these articles are heavily cited as well.

- 12) Delfour F, Aulagnier S (1997) Bubble blow in beluga whales (*Delphinapterus leucas*): A play activity? *Behavioural Processes* 40: 183-186.

Recorded the occurrence and pattern of bubbleblows in five belugas at VA.

Web of Science yielded **one** paper on captive cetaceans by same first author.

- 13) Nordquist C, Hutchins M (1985) Killer whale shares food with gulls at the Vancouver Public Aquarium. *Zoo Biology* 4: 367-374.

A young orca at VA was observed sharing food with gulls.

No citations were identified.

Peer-Reviewed Research on Captive Cetaceans at ML

In order to identify original peer-reviewed scientific papers from ML, the company's website www.marinelandcanada.com was reviewed with no references to research papers being found. A search for the term "Marineland" was then conducted in the Web of Science database (with no date limits) and a total of **six research papers** over the past 10 years^{vii} were identified describing studies conducted at ML. A search on Web of Science for the authors of those papers was then conducted with no further results.

In order to conduct a citation analysis of each of the six papers from ML, Web of Science was used to count the number of peer-reviewed original scientific papers citing each article. In cases where no citations were found by the Web of Science, the findings were confirmed using Scopus or GOOGLE scholar.

Results

The six peer-reviewed papers from ML are listed here with brief descriptions followed by the results of the citation analyses:

- 1) George EM, Noonan M (2014) Respiration rates in captive beluga whales (*Delphinapterus leucas*): Effects of season, sex, age, and body size. *Aquatic Mammals* 40(4): 350-356.

Respiration rates of 55 beluga whales (adults and calves) at ML were measured and found to be correlated with various factors, e.g., season and age. The authors state that these data will hopefully add to knowledge and welfare of captive beluga whales.

The Web of Science search indicated that there were **no citations** of this paper. Confirmed by Scopus.

- 2) Glabicky N, DuBrava A, Noonan M (2010) Social–sexual behavior seasonality in captive beluga whales (*Delphinapterus leucas*). *Polar Biology* 33.8 (2010): 1145-1147.

Measured pelvic-thrusting as an index of reproductive state in fifteen captive belugas at ML. Male-on-female thrusting peaked in March. Male-on-male thrusting was frequent throughout all months.

The Web of Science and Scopus searches found **one citation by the same authors** in a 2014 paper and **no other citations**.

- 3) Graham MA, Noonan M (2010) Call types and acoustic features associated with aggressive chase in the killer whale (*Orcinus orca*). *Aquatic Mammals* 36: 9-18.

Measured frequency of aggressive chase between two captive orcas. Identified vocalizations associated with aggression. Authors hoped these results can help in interpreting wild orca vocalizations but admit concerns that n= 2 in captivity may not be generalizable to wild animals.

The Web of Science search showed that this paper was cited by another author, O. Filatova, **four times**; these were studies of vocalizations in wild orcas.

- 4) Dubey JP et al (2009) Toxoplasmosis in captive dolphins (*Tursiops truncatus*) and walrus (*Odobenus rosmarus*). *Journal of Parasitology* 95(1): 82-85.

Toxoplasma gondii infection was detected in several marine mammals at ML. Antibodies to *T. gondii* were found in all seven bottlenose dolphins (*Tursiops truncatus*) tested. Two of these dolphins, as well as a walrus (*Odobenus rosmarus*) at the facility, died of the disease.

The World of Science search yielded **eight relevant citations** (two papers on captive cetaceans and six on wild cetaceans).

- 5) Mortola JP, Limoges M-J (2006) Resting breathing frequency in aquatic mammals: A comparative analysis with terrestrial species. *Respiratory Physiology & Neurobiology*, Volume 154, Issue 3: 500-514

Compared resting breathing rate in several aquatic mammals (including those from ML) with terrestrial mammals.

Web of Science yielded **nine citations of which five were by the original author**, JP Mortola and only **two** referred to cetaceans.

- 6) Gerard D, Cohen E, Cunningham R, Fitzpatrick JE, Godsell C (1987) Natural antibodies to human lymphocytes and erythrocytes in the serum of *Orcinus orca* killer whale. *Developmental and Comparative Immunology* 11: 637-647.

Blood samples were taken from one orca at ML (other cetacean sera used were provided by SeaWorld of Orlando). Analysis showed that orca blood contains an antigen similar to a naturally occurring human antibody. The authors claim that isolation of these antigens from orca blood may help to identify specific receptors on blood cells in humans.

Web of Science and Scopus yielded **no** citations.

Discussion

The literature search and citation analyses for both VA and ML lead to several conclusions. The research output using captive cetaceans as study subjects at both facilities could be characterized as not substantive. Over the past 30 years at the VA, there have been only 13 peer-reviewed scientific papers, and over the past 10 years at ML, only six. (There have been a number of additional research papers on captive non-cetacean species, primarily pinnipeds, at VA.)

Vancouver Aquarium

A number of studies of cetaceans supported by the VA are field studies conducted with wild cetaceans. Studies on captive cetaceans are in the minority. This point strongly suggests that captivity is not necessary for most of the research on cetaceans (and other marine mammals^{viii}) done by VA.

In addition, citations for four of the original papers are on captive animal welfare and do not necessarily have any relation to conservation or protection of cetaceans in the wild.

Most of the original papers done on captive cetaceans at VA are not widely cited and therefore seem likely to have little impact. The exception is the work by Christine Erbe and her team on hearing threshold in belugas. Her papers are more widely cited than any of the others, include citations by authors of studies on wild cetaceans, and clearly have more of a potential impact on conservation than the other papers. Given the important role of anthropogenic noise in the welfare of wild cetaceans, her work appears to have important applications. With that said, it is not entirely clear how much of the applied research on noise and hearing in wild cetaceans was made possible by the captive research.

MarineLand

The papers in which captive cetaceans are the study subjects at ML have been cited only a minimal number of times by independent authors. Three of the papers have not been cited at all. A closer look at Mortola & Limonges (2006) reveals that, of the nine citations, five were by the original author, i.e. not independent citations, and only two focused on cetaceans.

The paper with the greatest impact, based on citation analysis, was Dubey et al. (2009), a study of *Toxoplasmosis* in captive bottlenose dolphins and a walrus at ML. This paper was cited in two papers on captive cetaceans and six on wild cetaceans. Interestingly, this paper (with the most citation rates from MarineLand) is based on a fortuitous circumstance by which the captive dolphins happened to be suffering from a pathogenic condition, *Toxoplasmosis*, also found in wild counterparts. It is not clear that the studies of pathogens in captive animals contribute directly to our understanding or ability to deal with the same pathogens in wild animals.

The original research on captive cetaceans appears to have had minimal impact.

Conclusion

While studies conducted on cetaceans in captivity may make a small contribution to the overall pool of knowledge about these animals, many captive studies seem to have no substantive or direct conservation value. With one possible exception, the papers from captive studies of cetaceans at VA and ML do not provide substantive evidence to counter this conclusion. Other analyses in the literature support this conclusion as well. Hill et al. (2016) found that only 11% of all orca papers used captive orcas as research subjects and only a third of all bottlenose dolphin papers used captive dolphins as research subjects.^{ix} This is consistent with this report's results regarding belugas and dolphins.

There is a more general problem associated with justifying research on captive animals from a conservation standpoint. The problem, as discussed in a very recent review by Jaric et al. (2015)^x, is that almost all of the species and populations studied in captivity are not highly endangered in the wild. Likewise, those species that are the most endangered in the wild are not typically found in captivity. An example is the vaquita (*Phocoena sinus*), which is currently the most endangered cetacean in the world. One might ask why vaquitas and/or other critically endangered cetaceans are not given more attention by zoos, marine parks and aquariums. One might validly question the authenticity of their conservation goals given that they do not focus on the most endangered species for study purposes.^{xi}

Clearly there are more common species of cetaceans in captivity than there are members of endangered species. It may be that highly endangered species, like the vaquita, do not survive in captivity in order to be studied or that they will be further threatened by the removal of even small numbers of individuals. A look at each of the species of cetacean ranked by IUCN (International Union for the Conservation of Nature) as most at risk reveals that for each of the better known species, the risks, and what is required to mitigate them, are already well-known. There are a range of species that are data-deficient, but none is kept captive. But regardless of the reasons or the intentions, the fact that zoos, marine parks and aquariums keep and focus primarily on the commonest cetacean species, and not on highly endangered species, may limit the applicability of their studies of captive cetaceans to the conservation of wild populations.

Zoos, marine parks and aquariums may suggest this argument is unreasonable and that studies of the more common cetacean species (i.e., those held in captivity) result in findings that are applicable to and that benefit their more endangered wild relatives and that promote broader conservation goals.

For example, Sea World makes such claims on its website.^{xii} However, in the absence of substantial evidence supporting that assertion, their claims appear questionable and are not borne out by our review and analysis of the literature.

EDUCATION: PRELIMINARY ANALYSIS AND COMMENTARY

The goal of this report is to provide a preliminary review of the VA and ML's educational activities and materials, specifically cetacean shows, informational graphics and online information directly associated with and/or dependent on the keeping and display of live cetaceans in captivity.

This report is based on observations of shows (available to members of the public) during several site visits, exhibit graphics, reviews of websites and online outreach and educational materials, and the findings of more broad-based research regarding the claim that zoo, marine park and aquarium exhibits are educational and lead to conservation-oriented attitudes and behaviors. Other kinds of educational programming and activities not directly associated with the keeping and display of live cetaceans at either facility were not reviewed.

It should be noted that while the VA website makes numerous references to education, ML's website makes comparatively fewer statements in that regard. However, the ML website does have a section entitled "For Teachers," that contains information about school programs with links to several resources and another section titled "Education" that contains general information and fact sheets.^{xiii} As well, both facilities are accredited by Canada's Accredited Zoos and Aquariums (CAZA)^{xiv} and are therefore expected to deliver educational programming to their guests and visitors as a condition of their membership.

The importance of education is articulated throughout CAZA materials. According to CAZA, accredited member institutions are supposed to have clear education strategies and goals,

CAZA's accreditation program revolves around the principle that zoos and aquariums have a critical role to play in supporting species conservation and biodiversity and that to play that role effectively, they must be guided by the highest standards of safety and animal care, as well as by clear education strategies and goals.

The accreditation program and the standards on which it is based have gone through numerous changes as knowledge of animal care, conservation and education practices, as well as societal values and expectations, have evolved.^{xv}

On its website, CAZA indicates that education is a key tenet of its accreditation program. It says,

Conservation education being a main pillar of CAZA/AZAC's accreditation program, Canada's accredited zoos and aquariums are ideally placed to reach millions of visitors each year with important insights into the need to preserve our planet's biodiversity.^{xvi}

CAZA's Accreditation Process Guide 2016 identifies *Primary Considerations of the Commission and Visiting Committee*, which include,

Conservation and Education: The scope of the institution's conservation and education programs will be closely reviewed. Consideration is given by the inspectors and the Commission on the size, budget, and other areas affecting these programs.^{xvii}

The preamble to CAZA's policy regarding educational activities states:

The role of animals in an educational activity in zoos and aquariums is acceptable only if the program contributes to the understanding of fundamental biological and ecological principles; the development of knowledge that can reasonably be expected to benefit the animals, their environments, and humans; or that contributes to the understanding of environmental principles and issues with the goal of changing human behavior. These are outcomes of the process we define here as Education.^{xviii}

Vancouver Aquarium

VA site visits occurred in August 2015 and October 2016. Transcripts of the 2016 shows were produced and are included in Appendix 2. All of the publicly accessible cetacean exhibits were observed, as well as the beluga whale show. On-site informational graphics were also observed, as were materials from the VA's website.

The 2015 show featured two belugas, Aurora and her daughter Qila. The show consisted of trainers talking generally about the belugas, the whales stationing for the trainers, and a few other very simple elements.

What was particularly noteworthy to the issue of whether the show was educational in any meaningful way was the paucity of relevant data presented about the beluga whale species in general and, at the same time, several misleading claims made about how the audience could help conserve belugas.

Towards the end of the show, a trainer stated explicitly that there is no need to "worry" about seeing belugas in the wild (as it is so inconvenient) because they are here in the VA for the price of a ticket. The implication appeared to be that seeing captive belugas is equivalent to seeing them in their natural habitat and that captivity is justified because it is inconvenient to go out and see them in their own environment. This could reasonably be characterized as an *anti*-conservation message.

In addition, the trainer said that there is a way to help "conserve" beluga whales and then went on to say that the best way to do that would be to buy more food and souvenirs in the park's gift shop. The implication was that the more money one spent at the VA on "extras" the more one could feel that they were helping the whales. That was the extent of the "conservation and education" content of the show, as far as could be determined.

In fairness, it should be noted that trainer comments in the 2015 show may have been off-script as those comments were not incorporated into any of the observed 2016 shows (see Appendix 2).

The zoo, marine park and aquarium industry maintains that the keeping and display of cetaceans (and

other animals) serves a substantive educational function and that they promote conservation and a change in public attitudes.^{xix}

To sustain a claim that a captive animal display, show or materials are educational, it is reasonable to expect that two fundamental criteria will be satisfied. First, the information must be accurate, objectively presented, and reasonably comprehensive in scope. Second, there must be evidence, based on valid outcome measures, that the display produces learning or attitude changes in visitors. Even if it can be said that the presentation information summarized above might arguably have fulfilled the first criterion (the trainer's presumably off-script comments notwithstanding), we are not aware of any substantive evidence that the second criterion has been met.

Factual inaccuracies were not found in the VA's on-site informational graphics or online outreach and educational materials. However, claims of education at the VA may be characterized by a common error found throughout the zoo and aquarium industry. The VA does not appear to evaluate outcome measures to demonstrate that visitors learn from the materials they provide. And the current literature, reviewed in Marino et al. (2010), based on survey studies from other facilities does not support the general claim that simply providing information (and live animal displays) is educational.^{xx} This is articulated in a number of peer-reviewed papers and other materials. In actuality, these surveys may confuse visitors' impressions of learning with actual learning. In short, at best, the zoo, marine park and aquarium industry seem to rely primarily on asking park visitors whether they *think* they have been educated and using those responses as evidence for real education.^{xxi}

A thorough review of the studies identified as supporting the claim that zoo and aquarium displays are educational indicates that they suffer from serious methodological weaknesses and that, to date, *there is no compelling evidence that zoo and aquarium visits are educational in any meaningful sense of the word or promote conservation attitudes*^{xxii}. Since the publication of the 2010 Marino et al. review, this conclusion still holds and the VA has not presented substantive evidence to the contrary.

It should also be noted that the online outreach and educational materials are not reliant on the keeping and public display of cetaceans in captivity, with the exception of the VA's Beluga and Porpoise cam.^{xxiii} Educational materials can be produced and disseminated without the use of live animals. In fact, numerous facilities, organizations, agencies and government departments that do not keep or display cetaceans provide comparable, or even more comprehensive, materials online.^{xxiv}

Although the VA offers an extensive array of materials for education and outreach, it does not appear to provide online (or on-site as far as could be determined) any substantive evidence showing that they are actually educating visitors in the way they claim and certainly not directly through the display of their cetaceans. Moreover, it is clear that much of their more formal education programming about cetaceans does not rely on the keeping and public display of those animals.

MarineLand

Site visits to ML occurred once in September 2015 and twice in September 2016. All of the publicly accessible cetacean exhibits and informational graphics were observed on each visit as well as six of the regularly scheduled marine mammal shows in the King Waldorf Stadium. Materials from the ML

website were also reviewed. Transcripts of the show dialogue of three of the King Waldorf Stadium shows are contained in Appendix 2.

The 2015 King Waldorf Stadium show featured various marine mammals, including bottlenose dolphins, beluga whales, sea lions and walruses. No walruses were present in the September 2016 shows on either date. The animals were engaged in trained behaviors such as retrieving and balancing balls and large rings, waving to the audience, splashing the audience, dancing with trainers, trainers riding beluga whales, and other similar acts with the animals. Perhaps most noteworthy was the relative paucity of authentic information provided to the audience in the show commentary. Only a small number of facts about marine mammal biology, behavior and/or lifestyle were presented to the audience during the 2015 show. To determine if the level of factual content was “normal,” additional shows were observed and recorded in September 2016. Three shows were documented and each contained similar levels of content.

In recent years, there has been concern expressed about the way cetaceans (and other animals) are presented in zoo, marine park and aquarium shows and performances (see materials in Appendix 1). Those concerns suggest that tricks and stunts that have little relevance to the natural biology, behaviour, lifestyle or conservation status of the animals make the animals seem more like circus clowns or imitation people than the complex, sentient creatures they actually are. Some experts contend that a “performance is not an educational vehicle but a show in which miseducation...occurs more often than not.”^{xxv}

The only informational graphics about cetaceans encountered on-site at ML were situated in a poorly illuminated area of the below ground visitor viewing gallery of Friendship Cove, the beluga whale and orca display. Here there are two signs situated on the back wall opposite the underwater viewing windows. One panel contains information about beluga whales, and another provides basic information about orcas. Some visitors seemed unaware of their presence. Given that Friendship Cove is one of ML’s signature exhibits, frequently referenced in its advertising, one could reasonably expect informational graphics and other materials to be more obvious, comprehensive and engaging to visitors, and better incorporated into the exhibit experience.

One of the fundamental tenets of education is that the information imparted must be accurate. A review of the information provided on ML’s website reveals that some statements are inaccurate, outdated or misleading. In addition, there is an absence of information concerning many important facets of cetacean biology, behaviour, lifestyle and conservation threats.

Several examples from the ML website, concerning very basic facts about cetaceans, illustrate the points above,

There are 77 species, which are divided into two main groups; baleen whales and toothed whales^{xxvi}.

This statement is incorrect. There are currently thought to be 89 living cetacean species^{xxvii}.

Beluga whales often swim in shallow waters at depths that barely cover their bodies. In general they are not thought of as deep diving marine mammals, but they are capable of making deep dives and staying under water for as long as 15 minutes.^{xxviii}

This statement is outdated. Beluga whales are now considered to be deep-diving animals. According to one recently published study concerning Russian Chukchi Sea belugas,

*“Shallow” diving behavior was characterized by dives mostly 50 m in depth...The depths to which belugas most commonly dive in Barrow Canyon and along the Beaufort shelf break (200 – 300 m) correspond to the boundary where colder Pacific water overlies warmer Atlantic water, which is probably where Arctic cod (*Boreogadus saida*) are most dense. Diving depths within the Arctic Basin suggest that belugas are foraging mostly within the warm layer of Atlantic Water (~200 – 1000 m).*^{xxix}

Another investigation indicated that belugas regularly dove to depths between 20 – 300+ meters,^{xxx} and other diving behaviour studies also refute the suggestion that belugas do not routinely dive deep.

On the killer whale page, ML states,

It is believed that the killer whales [sic] may live for up to 50 years.^{xxxi}

This statement is misleading. In fact, killer whale longevity was calculated over 20 years ago in a ground-breaking study and while it is true that females have a mean life expectancy of 50 years, their maximum estimated life span is 80-90 years, or perhaps even more.^{xxxii} Maximum estimated longevity for males is estimated at 60-70 years. Interestingly, the on-site graphic in Friendship Cove indicates the correct longevity information for killer whales.

The observed animal shows indicate that visitors are receiving primarily ‘fun fact’-based information that is readily available through a multitude of other media. The on-site graphics provide mostly basic information and do not substantively discuss the range of conservation threats that killer whales, belugas and dolphins face. ML’s online information needs revision to correct inaccuracies and to properly reflect current knowledge.

It is worth noting that basic and even advanced technical information about cetaceans is easily available online and in a variety of other media and is not dependent on the keeping of live cetaceans in captivity.

Concluding Comments

Does the keeping of cetaceans in captivity at the VA and ML result in substantive conservation research and education benefits? While some research studies have been conducted at both facilities, the output of research papers in which captive cetaceans are the study subjects seems relatively low and, as the citation analysis suggests, with one possible exception, impacts do not appear to be substantive. As well, the educational benefit of cetaceans in captivity at both facilities is not substantiated by our review.

Since the keeping of cetaceans in zoos, marine parks and aquariums has been one of the most controversial issues in the “zoo world” (including in Canada) and because facilities spend tens of millions of dollars keeping and displaying them, one could reasonably expect individual facilities and their respective industry associations to have produced a substantial body of peer-reviewed studies proving that they actually do educate visitors in a measurable, positive way and to have conducted far more conservation-related research efforts using their captive cetaceans as study subjects. To date, as this analysis shows, they have not done so.

There is no doubt that cetaceans have long been a mainstay of many institutions and, for some, the foundation on which they are built. But even though the study of captive cetacean welfare is progressing and public attitudes are changing, many facilities and their respective industry associations still seem reluctant to transition away from these exhibits. Certainly, there have been some voluntary changes, such as the VA’s termination of orca keeping and their pledge not to acquire wild-caught animals, but cetacean display is still viewed as a staple of Canadian facilities. In fact, the VA is currently planning an expansion of its whale facilities.

Outside of Canada, there have been changes as well. SeaWorld announced that they will no longer be breeding orcas and will not acquire new animals from the wild. The State of California recently codified this corporate policy in law. Some countries have even gone so far as to ban the importation, keeping and display of all cetaceans entirely. And every month, additional initiatives, in various countries, aimed at improving the lives of cetaceans in captivity or restricting or eliminating their wild capture, trade, keeping and display, continue to surface.

This report suggests that the conservation research and educational benefits of keeping live cetaceans in captivity may not be as significant as claimed. We hope this report encourages others to investigate, discuss and debate this topic with the aim of improving the lives of cetaceans, both in captivity and in the wild.

ENDNOTES

i When the Georgia Aquarium (GA) and its partners were attempting to import 18 wild caught Russian beluga whales into the United States, the GA website stated, "Maintaining a sustainable population of beluga whales in human care is essential to the survival of belugas everywhere." See Laidlaw, Rob, Looking at Fragments of Nature, in Sorenson, J. (ed.) *Critical Animal Studies, Thinking the Unthinkable*, Canadian Scholar's Press, Canada, p 137-153, (2014)

ii <https://www.zoocheck.com/?s=Virtual+Zoos>

iii Zoos, marine parks and aquariums also suggest that considerable financial, material and technical support is provided for in-situ conservation initiatives, but their contribution in that regard is often minimal. See Laidlaw, Rob, Looking at Fragments of Nature, in Sorenson, J. (ed.), *Critical Animal Studies, Thinking the Unthinkable*, Canadian Scholar's Press, Canada, p 137-153, (2014)

iv See Appendix 1, selected bibliography.

v Zoos, marine parks and aquariums sometimes suggest that the funding for field studies comes from revenues generated by the keeping and display of cetaceans. While there is some truth to that argument, it should be noted that a multitude of field studies of wild cetaceans throughout the world are conducted without support from public display facilities. In fact, most zoological facilities dedicate little (and sometimes none) of their revenues to research in the field.

vi Zoos, marine parks and aquariums have suggested that their studies do now or may in future have applicability to the conservation of cetaceans in the wild.

vii It should be noted that there were no date limits on the database search.

viii A list of Vancouver Aquarium research papers and other materials can be found at

<https://www.vanaqua.org/act/research/publications>

ix Hill, H. M., Guarino, S., Dietrich, S., & St. Leger, J. An inventory of peer-reviewed articles on killer whales (*Orcinus orca*) with a comparison to bottlenose dolphins (*Tursiops truncatus*). *Animal Behavior and Cognition*, 3(3), 135-149. doi: 10.12966/abc.03.08 (2016)

x Jaric I, J. Knezevic-Jaric & J. Gessner, Global effort allocation in marine mammal research indicates geographic, taxonomic and extinction risk-related biases. *Mammal Review* 45: 54-62(2015).

xi While the vaquita is provided as an example, it should be noted that experts believe that the risk factors for the vaquita are already known and resolving them requires effort in the socio-economic and law enforcement arenas, which have nothing to do with captivity.

xii On their Killer Whale, Conservation and Research page < <https://seaworld.org/en/animal-info/animal-infobooks/killer-whale/conservation-and-research> > SeaWorld states, "The study of captive cetacean populations in controlled research settings has provided fundamental information on many species-specific aspects of their biology. Observing cetaceans in marine life parks allow for long-term, fine-scale studies that would be difficult to achieve in the ocean and such studies add to our overall knowledge of cetaceans and supplement fragmented information from observations in the wild. A contribution to our understanding of the basic physiological processes in killer whales has been derived from captive populations including adaptations to diving, auditory detection, echolocation and learning, reproductive physiology, growth and development, metabolic and energy requirements, health status, immune system function, and genetics...As such, these captive populations can provide models for understanding geriatric changes and impacts of unique age or event-specific physiologic stressors to wild populations."

xiii Marineland, Accessed at <http://www.marinelandcanada.com>, October 7, 2016

xiv The Vancouver Aquarium is also an accredited member of the US-based Association of Zoos and Aquariums (AZA).

xv Canada's Accredited Zoos and Aquariums, Accreditation, Accessed at <http://caza.ca/accreditation>, October 5, 2016

xvi Canada's Accredited Zoos and Aquariums, Campaigns, Accessed at <http://caza.ca/campaigns>, October 5, 2016

xvii Canada's Accredited Zoos and Aquariums, Accreditation Process Guide 2016, Accessed at <http://caza.ca/wp-content/uploads/2016/06/Accreditation-Process-Guide-2016-Amended-June-1-2016.pdf>, October 5, 2016

xviii Canada's Accredited Zoos and Aquariums, Use of Animals in Education Programming, Accessed at <http://caza.ca/wp-content/uploads/2016/06/CAZA-Policy-on-Use-of-Animals-in-Educational-Programming.doc.pdf>, October 5, 2016

xix Some zoos, marine parks and aquariums suggest that the simple act of looking at animals is educational, while others suggest that the live animal experience creates some kind of engagement or connection to nature. It is beyond the remit of this commentary to examine those assertions, but interested readers are encouraged to review the publications in Appendix 1 for additional information.

xx Marino L, S. Lilienfeld, R. Malamud, N. Nobis & R. Broglio, Do zoos and aquariums promote attitude change in visitors? A critical evaluation of the American Zoo and Aquarium study. *Society and Animals*, 18: 126-138 (2010)

xxi Ibid.

xxii Marino L, S. Lilienfeld, R. Malamud, N. Nobis & R. Broglio, Do zoos and aquariums promote attitude change in visitors? A critical evaluation of the American Zoo and Aquarium study. *Society and Animals*, 18: 126-138 (2010). Also see Marino L, S. Lilienfeld, R. Malamud, N. Nobis & R. Broglio, Strong claims, feeble evidence: A rejoinder to Falk et al. (2010). *Society and Animals*, 19: 291-293, (2011).

xxiii The live cams page of the Vancouver Aquarium website < <https://www.vanaqua.org/learn/see-and-learn/live-cams> > states, "Get a sneak peek at some of our most charming animals through our live web cams. Watch the belugas swim with ease in the icy waters similar to the frigid waters of the Arctic, or watch our energetic and highly curious sea otters solve the mysteries of toys. These animals are highly adapted to their own unique environments. Observe their unique behaviours in real time through our live cams, or come and visit them in person at the Vancouver Aquarium." The educational value of this kind of live web cam is not known.

- ^{xxiv} See www.savethewhales.org; uk.whales.org; www.marinemammalcenter.org; www.mmsc.org; www.marinemammalscience.org; www.acsonline.org; www.nmfs.noaa.gov/pr/species/mammals
- ^{xxv} Rose, N., R. Farinato & S. Sherwin, The Case Against Marine Mammals in Captivity, 3rd. Edition, Humane Society of the United States & World Society for the Protection of Animals, USA (2006)
- ^{xxvi} Marineland, Cetaceans, Accessed at <http://www.marinelandcanada.com/education/marinemammals/cetaceans>, October 1, 2016
- ^{xxvii} Whale and Dolphin Conservation, Introduction to WDC Species Guide, Accessed at <http://uk.whales.org/issues/introduction-to-wdc-species-guide>, October 1, 2016
- ^{xxviii} Marineland, They're born this way – Adaptations for an Aquatic Environment (blog post – Feb 22, 2016), Accessed at <http://www.marinelandblog.ca/theyre-born-this-way-adaptations-for-an-aquatic-environment>, October 1, 2016
- ^{xxix} Citta, John J. Robert S. Suydam, Lorit Quakenbush, Kathryn J. Frost, & Gregory M. O'Corry-Crow, Dive Behavior of Eastern Chukchi Beluga Whales (*Delphinapterus leucas*), 1998 – 2008, Arctic, VOL. 66, NO. 4 (December 2013) P. 389 – 406
- ^{xxx} Martin, A. R., and T. G. Smith, Deep diving in wild, free-ranging beluga whales, *Delphinapterus leucas*, Can. J. Fish. Aquat. Sci. 49: 462-466 (1992).
- ^{xxxi} Marineland, Killer Whales, Accessed at <http://www.marinelandcanada.com/education/marinemammals/killerwhales>, October 1, 2016
- ^{xxxii} NOAA Fisheries, Killer whale (*Orcinus orca*), Accessed at <http://www.nmfs.noaa.gov/pr/species/mammals/whales/killer-whale.html>, October 1, 2016

APPENDIX 1
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- NOAA Fisheries, Georgia Aquarium Application to Import 18 Beluga Whales (File No. 17324) Full Text of Judge's Decision (2015) http://www.nmfs.noaa.gov/pr/permits/ga_court_decision_092815.pdf

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APPENDIX 2
SHOW TRANSCRIPTS

Vancouver Aquarium

Transcript 1

Tuesday October 11, 2016

Show length: 15 min, 24 seconds (approx.)

How is everyone doing this afternoon?

I think we can do a little bit better I know where a small audience but I think you have it in you to give it all you got.

Are you having fun this afternoon?

Much better.

We'll keep that excitement going because it is a really cool opportunity to get to know some of the animals that we have here at Vancouver aquarium.

How many of you, by show of hands, are seeing a beluga whale for the very first time today?

Ahh, fantastic quite a few hands going up.

It's no surprise it's very difficult to be able to see these animals out in their natural environment.

Can you shout out where in the world Beluga's live?

Yes, nicely done, all the way up in the Arctic you can find populations of beluga's and if anyone's visiting from Québec you could also see belugas in the St. Lawrence River estuary.

If you have a look at this habitat you might be wondering who is who, on the far right we've got Aurora who's joined today by trainer Indy and making her way towards the front of the habitat we've got beluga Qila joined today by trainer Troy.

And they are a fantastic duo because Aurora is in fact the mother of Qila and Qila was born right here at the Vancouver aquarium in fact she turned 21 just this past summer so it's pretty amazing to have both of them here together.

But of course they're not the only animals or humans in this habitat.

If you look towards far left side on the back you may notice our other trainer her name is Rachel, and she is joined by a smaller marine mammal in here.

How many of you are seeing a harbour porpoise for the first time today?

Yeah I'm not too surprised.

They're very shy elusive animals believe it or not you can find them right off of our coast here in British Columbia, so you don't have to go very far to see them.

In this habitat we've got a harbour porpoise named Daisy and she is a fantastic animal.

She's actually a rescued, rehabilitated and non-releasable animal.

She was found when she was about 4 to 6 weeks of age stranded on the beach, came to our marine mammal rescue centre after going through her care and rehabilitation was deemed as a non-releasable animal and found a home here; where she is in fact the only harbour porpoise in human care in North America.

So, pretty amazing opportunity to have all these animals here and I would like to give a big welcoming round of applause to the animals and to our trainers this afternoon can you join me please?

Now even though harbour porpoises and belugas may not look alike they do share a lot of really similar adaptations in order to survive in their icy, cold homes.

And having them here we can actually help their counterparts out in the ocean as well.

In a rapidly changing world marine mammals like belugas and harbour porpoises every day are helping to connect us to ocean issues like climate change and overfishing.

And that's why it's really exciting being here to be able to see them and some of their amazing behaviours.

Have a look towards the front of the habitat and you'll see one coming from Qila, isn't that fantastic?

These animals are able to do so many things and it's an exciting opportunity to get to learn from them here.

Around the world there so many different types of cetaceans, that's whales dolphins and porpoises, and some of you may have seen them in tropical warmer waters but of course you can find a variety off our coast here in British Columbia and a little bit further north where it gets a little bit icier and a little bit colder.

And one thing that's really important for them to be able to survive is for them to be really strong you're seeing that especially from Qila and Aurora right now they have a lot of muscles and they are able to use that to move around in their environment and also allow them to do some pretty incredible things.

Now with these belugas you're seeing especially that strength from their tail using all those muscles to help them move around and it's not really the first thing you think of when you think of a beluga, because if you have a look at their body you can see even though they can do some of these amazing leaps at the front there.

They have a lot of blubber a lot of fat on their body this helps keep them warm but of course makes a very large but underneath all that they got those muscles and have to make sure that there exercising and showcasing and allows them to do these really powerful behaviours.

Now with harbour porpoises even though they are quite a bit smaller than belugas they are also very, very strong.

And they can swim on average about the same speed as belugas.

We don't actually know what the top speed is for harbour porpoise that's yet to really be discovered but on average both belugas and harbour porpoises can be anywhere from 5 km an hour although belugas can go up to about 20 km an hour so they can be quite speedy if they need to be.

And how they're able to have around in the water is extremely important because, well belugas are a migratory species and porpoises you can find all the way up to subarctic in areas that overlap with these animals as well.

And when they're travelling through the waters they do make a lot of noise these animals are very vocal and some of those sounds you may be able to hear today.

Let's see if we can have a listen for those belugas.

Can we get a big round of applause for Qila and Aurora, wasn't that fantastic?

Some sounds that even I've never heard before but really cool to be able to hear some of those.

They do have a really neat nickname known as the "canaries of the sea" they can make up to and over 40 different vocalizations.

Some you can hear from the surface of the water but sometimes they can make sounds at a higher frequency than what we are able to hear so perhaps they're actually making some noises right now that we may not be able to listen to.

And since we've been able to hear the belugas I want to see if maybe we can have a listen for Daisy.

So everyone let's have a listen, let's see if we can hear Daisy vocalizing.

Did anyone catch that?

No, probably not.

Okay so that was a little bit of a joke because we actually can't hear harbour porpoises.

When they are vocalizing it's at a higher frequency than what we are capable of hearing.

Humans can hear up to about 20 kHz belugas can hear to 130 kilohertz and harbor porpoises up to 200 kHz.

So it's likely that Daisy is vocalizing a lot right now but we just aren't able to detect that with just our ears.

You have to use specialized equipment like a hydrophone which is an underwater microphone to be able to detect what she is vocalizing and that is something that our researchers here have been able to do.

They found out that she's actually vocalizing quite a bit all the time and in fact the belugas may not even be able to hear her.

But why are they vocalizing?

Well, it could be to communicate to each other; it could be for navigating their surroundings and also staying in touch.

Cause if you think about the Arctic right now we are heading into the winter it's very dark it's very cold you can't always rely on your eyesight to be able to see so being able to make lots of sounds, that way they can stay in touch with one another and not get lost.

And these are just a few of my favourite adaptations that these animals have and it's pretty amazing to be able to not only witness that here in the aquarium but for us to be able to research that and understand it quite a bit more.

Because these animals unfortunately are facing a lot of threats out in our ocean and our environment and the more that we can understand by training them and working with them every single day the better we can help them and the counterparts out in the ocean as well.

So perhaps to tell us a little bit more about what goes into the care of these animals I'm gonna pass the microphone over to Troy on my left.

Thanks hey how is everyone doing today good you enjoying the sunshine out here in Vancouver still a little chilly but not as chilly as us water that's for sure.

These are of course Arctic animals so this water is quite cold we often get asked just how cold it is it's usually around 11°C.

Ok, now we go into the habitats and we're in the water with the animals quite a bit in fact both scuba diving as well as just going into the shallow water and even in the wet suit it gets pretty cold but it does give us an opportunity to get nice and close with the animals and do a lot of different things with them.

Because we work so closely with these animals allows us to really learn a lot more as I was saying there's so many different things that we can now do to understand more about these animals and help them as well as some of their wild counterparts.

And that's really what we try to do here at the aquarium it comes down to the relationship we have with the animals and being able to work so closely with them.

Now some of the most important behaviours that we train with the animals are what we call animal husbandry or animal health care behaviour and you seen some pretty interesting things, so far a big leap from Qila some higher energy behaviours those are really important we are always working on those behaviours making sure the animals get the exercise they need but were also working on new behaviours with them all the time for mental stimulation.

But the most important behaviours as I've said are those husbandry behaviours allows us to be able to look so closely at them and learn more about them so one of the different things that we're doing from the study standpoint we're actually trying to understand a little bit more about the animals DNA.

Now it's very challenging to study a beluga whale out in the wild because being able to get very close to them it's quite difficult.

Now we can look at these animals we get samples from these animals to help us understand more about them.

What I'm doing here is getting Qila to set up for what we call a chuff sample.

It's a forceful exhale from their blowhole where we can collect that sample so a chuff sample is just like this, good job and now we've trained to do that forceful exhale and we can collect what comes out of her blowhole not usually my hand we can put a Petri dish over top of that and we can collect that and understand more about what's going on on the inside.

We can ask her for a blood sample get a blood sample ask you to lay out just like this and we compare the two different samples and we start to learn about their DNA.

Now it's very difficult to go out and ask an animal in the wild to lay it like this to get a blood sample but it is a little bit easier to get that chuff sample.

So if your researcher working out in the wild they might be able to get that kind of a sample if we understand what they're seeing from those samples by having these animals here allows them to understand more about them and that's really important and again that's what we try to do use these animals to understand and help our researchers know what to be looking for out in the wild.

Again this is a blood sample set up, Qila's gotta hold nice and still and I can get a blood sample right from these veins that are right close to the surface on their tail.

This is a behaviour that she's very comfortable with because we practice the things all the time.

And now she has to trust me and I have to trust her but that comes from that relationship we have that allows us to work so closely with them.

So that's a little bit about some of the research, not some of the most exciting behaviours but they aren't really important really helps us to understand more about them now for little bit about that research will pass it back to you.

Thank you now can we give Troy a round of applause.

It's pretty cool to be able to see exactly that strong relationship and how that's able to help us understand them a little bit more and also as their counterparts with both the belugas and the porpoises though they may not look a like they do share a lot of similar adaptations in order to survive in their environment and having them here not only can we help them but their counterparts as well which is fantastic.

There so many different research programs that we are able to take part in and they're able to take part in and what Troy was mentioning is really just one of many other ones that we've been able to do again goes back to see sounds that they are making I mention that they can make 40 or more sounds for the belugas we've been able to identify about 28 of them that's by having them here at the aquarium but also by being able to see them in a natural environment just this past summer our researchers were able to visit that population in the St.

Lawrence River estuary and listen to the sounds of their able to make and then see exactly why is it they're using the sounds and how is it we can continue helping them.

Is there certain areas that we need to create Marine protected parks for these animals?

Other things like that. our researchers have also gone up to the Arctic to research these animals as well it's pretty cool to be able to see what it is been able to learn over the years because the Vancouver aquarium is a self supporting nonprofit organization dedicated to the conservation of marine life.

We have been for the past 60 years and it's really amazing to think about where he might go in the next 60 years what other questions do we need to be able to answer and how can all of you help us with that as well.

By being here today are supporting our research conservation and education.

You're also getting a chance to get a little bit closer so look out into the splash zone you might be able to see what I'm talking about as we get a little taste of that icy cold water from a Qila and Aurora but again you never know what it is that we're going to be able to discover and find out about these animals and how we can further connect ourselves to belugas and purposes as well.

So on behalf of Qila Aurora Daisy our amazing trainers Indy Troy and Rachel and myself Amanda thank you all so much for joining us here today at the Vancouver aquarium.

Vancouver Aquarium

Transcript 2

Tuesday October 11, 2016

Show length: 12 min, 39 seconds (approx.)

(transcript)

I do have a question though how many for you is it your first time seeing a Beluga or Harbor porpoise today.

Quite a lot of hands, if you folks looked around, and by all means I am not surprised. Most folks don't vacation in the arctic and porpoises are very shy and elusive animals that have the most fantastic camouflage.

I've never seen them either so the fact that we have them right here in front of you with our fantastic trainer I think hey what a better way to get to know these amazing animals.

So, I'm gonna introduce them for you folks as we have two beluga whales and a Harbor porpoise.

The belugas are also a mother-daughter pair the mother's name is aurora she's been with us back since 1990 back when she was somewhere in her late 20s she's been an incredible mother to her daughter Qila she's actually the one that's swimming close towards us today underneath the little bridge area by that island.

Taking care of the mother aurora is going to be Troy for this afternoon that's walking closely towards myself, but over on the farther back we also have Qila.

Qila is pretty special, she is the very first Beluga whale to be conceived and born in a Canadian aquarium, that was over 21 years ago. she had her 21st birthday this past summer.

Taking care of her today we have Rachel hanging out on the island and we also at the very far end of the exhibit from the Rocky point is our rescued Harbour Porpoise Daisy.

She was found washed ashore very young summer around four weeks of age brought to our rescue centre, our hopes were to release her but the fact that she was so young she didn't have survival skills is how she got to be here at the Vancouver aquarium and actually the only Harbor porpoise in the facility in North America.

And taking care of her this afternoon we have Indy hanging out in the opposite side of the exhibit.

So I'm thinking maybe just a big round of applause to welcome all the trainers and the animals what you say?

Fantastic thank you.

It's pretty amazing I find to be able to learn how these incredible creatures.

not only are they beautiful and amazing animals but really helped to push forward some those key ocean issues like climate change and overfishing to be able to name just a few.

You can imagine there are a lot of animals out there who are also facing these threats in fact looking at the whales porpoises and dolphins collectively known as a word called cetaceans, there's about 90 of them hanging out near tropical areas or cold, chilly areas especially like belugas who hang out in the arctic all year round.

But when you look at belugas they don't look anything like a Harbor porpoise but how many of you today might've looked at Daisy and thought she was a baby dolphin?

It's okay if you thought so it's a very common response and by all means she looks like one for sure.

But actually at the end of the day more she's more genetically related to beluga whales and that's just some of their amazing similarities besides being very comfortable in cold waters with ice packs all the way around them.

But one of the really cool things about them is how they can navigate because belugas can be found in the arctic or in the St. Lawrence River Daisy and Harbor porpoises can be found in harbours year round and all around the Pacific and Atlantic.

But they can navigate by making noises.

Now how many of you can see the mother aurora's forehead wiggling and jiggling there?

Do any of you know what that is on her forehead?

It's called their melon and is actually a big waxy substance that sits on top of the belugas and also Daisy and other Harbor porpoises skulls and is surrounded by muscles and helps them navigate and communicate as well.

Do you know what it's called when an animal uses noises to see the surroundings?

Yeah, echolocation or sonar; so what they'll do is they'll make a bunch of high frequency clicking noises and that melon actually not only helps to make the noises but helps them in a broad range of narrow range hone right in what exactly they're seeing.

And it's a great way for them to be able to know their surroundings in the pitch black whether it's a predator or whether a tasty food item they would like to be able to eat instead.

Speaking of food these animals have some pretty cool ways of being able to find it on top of echolocation.

In fact belugas probably have one of the coolest ways to access that I think and that's because they have flexible lips like ourselves which also means they can take a mouthful of water and they can spit it out as you can see from Qila over on the island.

They can spit into the air but if they spit it into the sand they can push it away uncovering any creatures they might like to eat buried inside like clams or muscles or worms which is pretty cool.

Now you might be wondering how much water can a beluga spit, well I know we can see little of Qila but if we look over that splash zone that baby might want to get out of the way some cold salt water coming her way.

So it's pretty amazing and actually belugas are the only whale to have such a powerful jet of water as we just saw.

Daisy the Harbor porpoise may be just a little bit but there is something the both of them can do which is kind of the reverse almost these animals can actually suction in their food the creative vacuum inside their mouth and slurp up any tasty animals that may be herring or capelin or squid which is actually what all of them are eating in this afternoon's training session in fact.

And it's amazing that these animals have so much in common which makes sense because they do live in the oceans together but it's really incredible I think for us to be able to see this in person and make that connection see how much water it is that they can spit having it right in front of you, or maybe on top of some of us.

But honestly it's through showcasing these natural behaviours and taking care of them here that gives them the best possible health care.

And it all comes down to the fantastic relationship that you're seeing takes place between the trainers and the animals but I say what better way to really find out about what's it is like.

Actually giving the best actual healthcare, having that strong bond of trust and probably hearing it straight from the source so I'm actually gonna be passing my microphone on to Troy.

Hi everyone so I'm with Aurora here and yes, as Chris was saying the relationship we have is the most important thing it allows us to be able to work closely with them just like if you have a dog or cat or other pet at home you spend a lot of time with them you develop that relationship.

It's the same thing with these animals we come out here and do lots of different kinds of sessions.

So even throughout the day you might see us at here during presentations like this of course, but we come out here and do lots of other things just play sessions, having fun with her animals building up that relationship is so important.

Now we have to have that bond of trust of course to be able to work so closely with them and by being able to work so closely with them we're able to do lots of cool things.

You've seen lots of cool behaviours so far during the show and lots of cool behaviours belugas can do, but I do want to have at some of the most important things, what we call animal husbandry animal health care is what really allows us be able to provide the top-notch care that we do have for all of the animals here at the aquarium but also allows us to learn a lot of things about them at the same time by doing so we can really help to care for these animals as well as conserve other animals out in the wild.

Now, you can see with Rachel over there she's getting a close look at Qila taking a look around her body she had her in the flute present which is how we take a blood sample from the animals.

Now we can't just walk over and say okay give us a blood sample, It's something we train with the animals to do you have to be very comfortable this is the position here we have our her tells the be here with me she's got a hold her breath a little bit of time and I will get a blood sample now it's a little hard to see from where you are but there are grey lines on their tail 's if you are at some point in time, later on down underwater viewing if you listen a little closer it's a place where the blood vessels are closest to the surface on the animals is where we get the blood sample from.

Well what is a blood sample tell us? Well it tells us a lot about the animal's health; of course, and that's important as I said healthcare behaviour being able to take the best care for the animals we can.

We compare that up with other things and help us understand a lot more about the animals.

If you were studying these animals out in the wild you can't just walk up to a beluga whale in the wild and say "hey I need some blood from you" it doesn't work that way, but we can understand a lot about them by understanding what we see with the animals here.

For instance a research project they we're doing we're actually looking trying to understand about the DNA of Beluga whales.

So we ask the animals for a blood sample we ask the animals for a chuff sample.

This is a Chuff, is basically just a forceful exhale from their blowhole.

We can collect what we get out of the blowhole on the Petri dish if we're actually collecting it for study and we compare that together to understand about their DNA.

Well, that's a sample that we might not be able to get a lot easier from the animal out in the wild so we know what it looks like if we know what to look for that's how we can start to understand more about animals in the wild.

These are our control animals because we know exactly what they're eating and we know exactly what they're doing and it helps us to understand more and understand more about them.

And that's really what we're trying to do here at the aquarium.

So there's a little bit about the research, maybe not the most exciting behaviours but they are really important ones for these animals and for all the animals here at the aquarium.

So I'll pass it back to you Chris.

Thanks Troy can we get a round of applause by the way walking us through that yet still taking care of a beluga Whale at the same time.

Cause I really find that having animals like the belugas in the porpoise here are really great in the way that, yeah we do these research projects to better understand and protect these animals, we have that strong bond of trust.

At the same time I feel it involves something pretty incredible for you folks, as most of you've never seen these animals, until today right?

So what better way to get to know them and want to protect them than getting to see them in person and fall in love with them first because honestly it's us making that connection with them by seen them in person that really helps us to fall in love with them and want to make sure that our grandchildren get the same opportunities that we do and have the same kind of animals in our oceans as well.

So I really want to thank you all for coming today because we are self-supporting nonprofit organization dedicated towards conservation of aquatic life many of the proceeds that you spent coming through the doors today, additionally at our shop and café go to help support to take care of these amazing animals.

Giving them the restaurant quality food in those buckets, the toys and the treats, the fantastic healthcare keeping care of these animals and incredibly intelligent minds as well too, and a lot of those research and conservation efforts couldn't be done without your help.

But otherwise fantastic ways for us to be able to get you connected to these animals and showcasing of course not only their natural behaviours but also provide the opportunity to want to learn more, or hoping that you fall in love with these animals and want to share that with your friends and family.

And if you want to discover more at home then aqua.org is a fantastic resource for you all.

But honestly I really want to thank you all for coming today, for all that fantastic support and getting to discover a little bit more about belugas and porpoises and how yes, they don't look a lot alike but the incredible adaptations they have in common including some fantastic research projects as well too.

So on behalf of myself on behalf of the trainers the incredible Beluga whales and of course Daisy the Porpoise we wish you a fantastic rest of your day.

Marineland King Waldorf's Stadium Show

Transcript 1:

3pm Tuesday Sept. 20, 2016

Show length: 21 min 36 seconds

(transcript)

Hello everyone and welcome to Marineland. We have a great show lined up for you today because King Waldorf has given us a challenge. He has hidden special objects around the castle that the animals have to help us collect to be able to open his chest.

So let's see how they do.

And it looks like Holly has found the first object. How are you doing Holly?

Holly, where are you going? You just left the object in the middle of the pool.

I don't think that's going to work. I think we can call one of our other sea lion friends out to retrieve the object.

And here comes Holly again and she's found the next object.

Great job.

Let's see if Holly and Cleveland can put that all together.

Give it up for Holly and Cleveland the sea lions.

Now it's time to bring out our next marine mammals (static) Our Beluga whales, Charmin and Tofino.

Let's see if Charmin can find the next object. She is going to need some help. Let's see who is the most excited person here who wants to meet a Beluga whale.

I think you can be more excited than that. I think we have a volunteer: the young lady in the pink and grey striped shirt. You can make your way down to the platform over here.

If you haven't yet been to Friendship and Arctic Cove today, make sure you visit our other Beluga whales.

In fact, beluga whales are considered the canaries of the sea because of their wide range of vocals.

Those are Charmin's sounds. Over here you have a wide range of vocalizations.

You can touch Tofino on his head, otherwise known as his melon. The melon is made up of fatty tissue and it allows the Beluga whales to make their wide range of vocalizations. You can feed Tofino a fish.

These whales eat a diet of capelin, herring and sometimes squid.

That is Tofino singing his volunteer a song.

And looks like we've found the next object somewhere ... can you throw it in and we will see Tofino when he gets back. Just toss it in.

And let's give Tofino some encouragement.

A great job to Tofino for bringing back that next object.

And now we can see a Beluga kiss.

It seems that Tofino is feeling a little bit silly today. Let me try that again.

Much better Tofino.

He will take that one last fish and wave goodbye to his new friend.

Don't worry, the Beluga whales aren't done just yet – they still have one last thing to show you.

Let's hear it for our Beluga whales, Tofino and Charmin.

And now let's wave good bye.

So what of King Waldorf's objects so far?

Let's take a short break so you can see what our California sea lions can do.

Please welcome to the stage Jake and Sydney the sea lions.

I think they need a bit of encouragement. Let's hear it for Jake and Sydney.

Let's hear it one more time for Jake and Sydney.

So you have seen the California sea lions and the Beluga whales. There is one more group of our marine mammals that still need to come out and those are the dolphins. So who wants to see the dolphins? Make sure you keep that energy up for all those dolphins.

Ladies and gentlemen, the Bottlenose dolphins.

The dolphins are going to need some help finding the next object so I need the most excited person who wants to meet a dolphin.

The young lady up front with the green shorts and pink shirt, and green hair, make your way down to the platform.

If you haven't been to Friendship Cove yet today make sure you visit our killer whale, Kiska. To biologists, killer whales are considered cousins of the dolphin family so they are cousins to these Bottlenose dolphins here.

What's your name? And where are you from?

Today our volunteer will be meeting Tsunami.

Dolphins are very tactile and love to be touched and rubbed.

Here at Marineland our Bottlenose dolphins eat a diet of capelin, herring and some gelatin.

Let's see if Tsunami can find our next object.

And she is off.

It looks like she might have found something at the bottom of the pool and she's headed back now.

And she has it. One of King Waldorf's objects has been collected.

Alright now she will give a dolphin high five. Very nice.

Don't worry the dolphins aren't done just yet. There are some more aerals to come from Sonar. Marina, Echo, Lida and of course Tsunami.

And if you point your cameras to the centre platform you can get a picture of our Bottlenose dolphins.

Let's hear it one more time for Sonar, Marino Tsunami, Echo, and Lida.

So now it's time to see if we collected enough of King Waldorf's objects to be able to open the chest.

And we did it.

On behalf of our marine mammal staff, our California sea lions, our Beluga whales and our bottle nose dolphins, we wish you a whale of a day here at Marineland.

Thank you we hope you enjoyed the show.

Transcript 2:

11:00am Tuesday Sept. 27th

Show length: 31 min 02 seconds

(transcript)

Recording that comes on before the show while the audience is waiting:

Did you know Beluga whales are known as the canaries of the sea? They use their sounds to attract a mate. They can move their heads side to side and nod up and down. This is because they do not have (muffled). The calves are born grey and turn white as they age. Beluga whales do not have a dorsal fin. Instead they have a dorsal ridge.

Hello everyone and welcome to Marineland. We have a great show lined up for you today. King Waldorf has given us a challenge. The marine mammals with the help of the marine mammal staff have to collect a series of objects hidden somewhere around this castle to be able to open this chest. So let's see how they do.

So take a look around the castle. Does anyone see any objects around?

Oh it looks like Holly the sea lion has found the first object.

Holly, where are you going? You just left the first object in the middle of the pool. You're not going to get it, that's pretty embarrassing. I guess we can call one of our other sea lion friends out to retrieve that object.

And it looks like Maui has retrieved it. And here comes Maui back to the stage.

That was very good.

(muffled)

And it looks like Maui has found the next object. You don't see it. Look right at you.

That's pretty cool. Now let's see if the sea lions can do something together with those rings.

And the sea lions are successfully able to work together to catch all three of those rings.

It seems like Maui is looking for the next object.

And let's hear it for Holly and Maui the California sea lions.

Now it's time to bring out our next marine mammals. Please join me in welcoming two of Marineland's Beluga whales, Charmin and Tofino.

So our Beluga whales will need help finding the next object so I am looking for the most excited person here who wants to meet a Beluga whale. The boy in the blue shirt and plaid jacket, you can make your way down to the platform.

Now if you didn't get to meet a Beluga whale at this show, you still have three more shows to go today, one o'clock, three o'clock and five fifteen. Or you can go to Friendship and Arctic coves and visit our other Beluga whales.

Now you may notice that some of them are grey because Beluga whales are born grey and lose pigment as they get older to become the beautiful white colour that you can see here with Charmin and Tofino.

What's your name?

Where are you from?

All the way from Ontario. You will be meeting Tofino the Beluga whale today.

So the first thing our volunteer will be doing is patting Tofino once he makes his way back to the platform.

As you may have just heard Charmin did a vocalization. Beluga whales are known as the canaries of the sea because of their wide range of vocalizations.

So another fun fact about Beluga whales is that they don't have a dorsal fin like dolphins, but they have a dorsal ridge. This allows them to slip under the ice when they are out in the wild in the Arctic.

It seems Tofino isn't in the mood to meet a volunteer at the moment.

Okay so it looks like we found the next object. So we will see what Charmin can do with it.

And while Charmin has done something with the object we can dig into our collection and be one step closer to opening King Waldorf's chest.

And since Tofino doesn't really seem to be in the mood right now, we are going to let our volunteer meet Charmin.

So it seems like Tofino and Charmin are not feeling very friendly at the moment. But they did find one of King Waldorf's objects.

So as you can tell sometimes the animals don't quite do what we want them to. Different individuals are sometimes not in the mood.

Sorry for that folks. But now we are going to take an opportunity to see how amazing California sea lions can truly be.

So we have seen several of our California sea lions already today, we've seen Maui, Holly and Malibu. Now we will see another one of our sea lions and her name is Sidney. So I'll take this moment to go over our objects and you can watch some of the amazing things California sea lions can do.

So please join me in welcoming to the stage Heather and Sidney, our California sea lion.

So now that you have seen how amazing California sea lions can be we should get back to looking for the next object, and we have one more group of marine mammals who still need to come out and those are the dolphins. So let's hear it for Marineland's five Bottlenose dolphins.

Ladies and gentlemen, Marineland's five Bottlenose dolphins.

They are going to need some help finding the next object so I need the most excited person who wants to meet a dolphin.

The young lady in the pink sweater and the dress wearing black leggings, make your way down to the platform here.

If you haven't been to Friendship Cove yet today make sure you visit our killer whale, Kiska. To biologists, killer whales are considered cousins of the dolphin family so they are cousins to these Bottlenose dolphins here.

And today our volunteer will be meeting Lida.

The first thing our volunteer will be doing is (muffled).

Dolphins are very tactile and love to be touched and rubbed. If you ever wondered what a dolphin feels like it's kind of like a wet rubber inner tube.

Our volunteer is going to feed Lida a fish.

Here at Marineland our Bottlenose dolphins eat a diet of capelin, herring and some sometimes squid.

And now it seems that Lida is singing her volunteer a song. And it looks like one of Lida's dolphin friends Tsunami is looking for the next object, and she has found it. So we have found another one of King Waldorf's objects.

And now a big dolphin high five to Lida and then a wave goodbye so she can get back to the show. And a souvenir for our volunteer will be she will remember the time she petted Lida the dolphin. And don't worry there are still some more high flying ariels to come from Sonar, Marina, Tsunami, Echo and of course Lida.

If you point your cameras to the centre platform you can get a picture of Marineland's Bottlenose dolphins.

And one more time.

And let's hear it for Sonar, Marina Tsunami, Echo, and Lida, Marineland's five Bottlenose dolphins.

Alright, so now it's time to see if we collected enough of King Waldorf's objects to be able to open the chest. Go ahead and try to open it up. You weren't able to open the chest? Okay why don't you try? You can't do it either? Try it together. There you go. I guess the real treasure was teamwork after all.

So on behalf of the marine mammal staff, California sea lions, Belugas and Bottlenose dolphins, we wish you a whale of a day here at Marineland.

Bye Bye for now.

Transcript 3:

1:00pm Tuesday Sept. 27th

Show length: 25min

(transcript)

Hello everyone and welcome to Marineland. We have a great show lined up for you today, because King Waldorf has given us a challenge. He has hidden special objects around the castle with the marine mammals with help of the marine mammal staff we will collect to be able to open the chest. So let's see how they do.

So take a look around the castle. Do you see any objects? It could be a ball, a book, some rings? Let me know if you see anything.

Oh it looks like Holly the sea lion has found the first object.

Holly, where are you going? You just left the first object in the middle of the pool. What, you're not going to get it, that's pretty embarrassing. I guess we need to call out one of our other sea lion friends to see if they can find it.

And it looks like Maui no trouble finding that object. And here comes Maui and Holly back to the stage. Welcome our two sea lions and that object.

That was very impressive Holly. And now Malibu is going to take that first object off stage and we'll see if she can find another.

And it looks like Malibu has found that next object. You don't see it? Look behind you.

That was pretty cool Malibu. Now let's see if the sea lions can work together to do something with those rings.

Three for three. A job well done for Malibu, Maui and Holly, the California sea lions.

Now let's wave goodbye to Maui and Holly.

Now it's time to bring out our next marine mammals. Please join me in welcoming two of Marineland's Beluga whales, Charmin and Tofino.

Now that we've seen what our Beluga whales can do it's time to start looking for the next object. But the Belugas are going to need some help so I am looking for the most excited person who wants to meet a Beluga whale. The young lady upfront with the purple sweatshirt wearing the and white poncho you can make your way down to the platform over here.

If you didn't get to meet a Beluga whale today we still have two more shows at three o'clock and five fifteen. Or you can head out to Friendship and Arctic coves to visit our other Beluga whales.

While you're out there you may notice that some of them are grey that's because Beluga whales are born grey and lose pigment in their skin as they become older to become the beautiful white colour that you can see here with Charmin and Tofino.

Our volunteer is going to start getting to know Tofino at the glass. He is going to give her a nice wave hello.

Now our volunteer is going to make her way up to the platform so she can get very acquainted with Tofino. The first thing our volunteer is going to do is pat Tofino on his head, also known as his melon. The melon is made up of fatty tissue and it allows the whales to make a wide range of vocalization.

Now we are going to feed Tofino some fish. Here at Marineland our Beluga whales eat a diet of capelin, herring, and sometimes squid.

Another tasty herring for Tofino.

Now it sounds like Tofino is singing his volunteer a song. That's one of the over 30 vocalizations Beluga whales can produce. And there's one of Charmin's. Because Beluga whales produce such a wide range of vocalizations they are known as the canaries of the sea.

And it looks like we found the next object. So our volunteer is going to throw the object in the water and we will have Tofino bring it back to us on the count of three. One, two three. And let's give Tofino some encouragement.

A great job to Tofino for bringing back that last object.

And now Tofino is going to wave goodbye to his new friend. A nice souvenir for her volunteer so she can always remember the time she met Tofino the Beluga whale.

And the Beluga whales aren't done just yet, they still have a thing or two to show you.

Put your hands together for the Beluga whales, Tofino and Charmin.

And now let's wave goodbye.

So between the California sea lions and the Beluga whales we have collected three objects so far, the ball, the rings and another ball by Tofino. So we are going to take a short break from finding the objects in order to give you the opportunity to see how amazing California sea lions can really be, so please join me in welcoming to the stage Heather and Sidney the sea lion.

I think they could use a little bit more encouragement than that.

Let's hear it for Heather and Sidney the sea lion. So we have seen the California sea lions and the Beluga whales. I still think there is another object or two we need to collect in order to open King Waldorf's chest so we're going to bring out our next marine mammal helpers. Put your hands together for Marineland's five Bottlenose dolphins.

Ladies and gentlemen, the Bottlenose dolphins.

Now our dolphins are going to need a little help finding the next object so I am looking for the most excited person who wants to meet a dolphin.

The young man in the red shirt and red and black sweatshirt you can make your way down to the... make your way down to the platform over here.

If you haven't been out to Friendship Cove today make sure you visit our killer whale, Kiska. To biologists, killer whales are considered members of the dolphin family.

Also make sure you visit our seals at the aquarium. There we have four harbour seals and a grey seal.

Today our volunteers will be meeting Tsunami.

Dolphins are very high energy but they're also very tactile and they love to be touched and rubbed. So one of the first things our volunteers will be doing is petting Tsunami.

If you ever wondered what a dolphin feels like it's kind of like a wet rubber inner tube.

Our volunteer is petting Tsunami on her tail also known as her flukes.

Next they'll be feeding her a fish.

Here at Marineland our Bottlenose dolphins eat a diet of capelin, herring and some gelatin.

Now it looks like Tsunami is up and looking for the next object. She is searching around and making her way back now. And she has found it. Another one of King Waldorf's objects has been collected.

For a job well done (muffled).

And a big goodbye so Tsunami can get back to the show.

And we will give our volunteers a souvenir so they can always remember meeting Tsunami the Bottlenose dolphin. Thank you to all of our wonderful volunteers today.

Don't worry there are still some high flying ariels to come from Sonar, Marina, Echo and of course Tsunami.

If you point your cameras to our centre slide-out you can get a picture pose of our Bottlenose dolphins.

And one more time. Another picture for... (muffled).

And let's hear it again for Sonar, Marina Tsunami, Echo, and Lida.

So we've found several objects from around the castle. Let's see if it was enough to be able to open King Waldorf's chest.

And we were able to do it. Teamwork between the marine mammal staff and all the marine mammals was the way to open that chest.

On behalf of the marine mammal staff, California sea lions, Beluga whales and Bottlenose dolphins, we wish you a whale of a day here at Marineland.

Bye Bye for now.

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Save the Vaquitas!
Date: Monday, April 03, 2017 9:47:19 AM

Congratulations!! Please continue to save the Animals!

Vancouver Aquarium suffered a major defeat on March 9 when the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. The commissioners acknowledged the incredible amount of support that people had sent in. Your voice was definitely heard!

But the commissioners need to hear from you again. They are currently preparing the new by-law and it will be subject to another round of hearings around May 15th. Support for this vital amendment must continue in order for it to survive. Emails that congratulate the commissioners for making the right decision, and continuing to do so, are key right now.

s.22(1)



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From: s.22(1)
To: PB Commissioners
Subject: Scientist speaking against cetacean captivity in the Vancouver Aquarium
Date: Wednesday, March 08, 2017 1:42:50 PM

Dear Commissioners,

I wish to bring to your attention two 6 minute long video interviews with two internationally respected marine scientists addressing issues related to cetacean captivity in the Vancouver Aquarium. The interviews were conducted and posted on You Tube in 2014.

One is an interview with Dr. Naomi Rose. Dr. Rose is an internationally known scientist. She did her PhD dissertation on the social dynamics among orcas in Hecate Strait, B.C.. She was a senior scientist with Humane Society International (1993 - 2013) is currently Marine Mammal Scientist at Animal Welfare Institute in Washington, DC.

Please view at : <http://www.bing.com/videos/search?q=janos+mate&qft=+Filterui%3auserpage-janosjmate&view=detail&mid=426FA6F6FA3E5F29CE48426FA6F6FA3E5F29CE48&FORM=VRDGAR>

The second video is with Dr. Paul Spong. Dr. Spong conducted research at the Vancouver Aquarium on cetacean physiological psychology. He founded the internationally recognised Orca Lab in 1970, on Hanson Island, British Columbia.

Please view at: <http://www.bing.com/videos/search?q=Paul+Spong&view=detail&mid=8F1CCF00DD7A33A550D08F1CCF00DD7A33A550D0&FORM=VIRE>

I hope the opinions of well informed scientist such as Dr. Rose and Dr. Spong will be of assistance to your deliberations regarding the future of cetacean captivity in the city.

Thank you for taking the time to view these videos.

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: sincerely
Date: Friday, March 10, 2017 4:33:40 PM

Thanks you for your decision. May many more aquariums and zoo's follow in your brave and forward thinking decision.

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: So happy!
Date: Sunday, March 26, 2017 9:42:52 PM

I'm thrilled that you've voted to prohibit the display and importation of cetaceans. I heard that there will be another round of hearing in May, please continue to support cetaceans in keeping them free in the water, with plenty of room where they belong =]



Park Board Meeting - Requests to Speak

Speaker Number	Last Name	First Name	Representing (individual / group / organization)	Position on Topic (support/ oppose/neutral)	Notes
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Special Board Meeting - March 8 & 9, 2017 (speakers shaded grey spoke Mar 8)

Agenda Item 1 - Cetaceans at the Vancouver Aquarium (* support = supports Aquarium; oppose = opposes cetaceans in captivity)

1	s.22(1)		Vancouver Aquarium	Support	Group A (Aquarium)
2			Vancouver Aquarium	Support	Group A (Aquarium)
3			Vancouver Aquarium	Support	Group A (Aquarium)
4			Self	Support	
5			American Humane Association	Support	
			Vancouver Humane Society and Zoocheck Canada	Oppose	
7			Self	Oppose	
8			Coalition for No Whales in Captivity	Oppose	
9			Self	Oppose	
10			Self	Oppose	
11			Self	Oppose	
12			No More Dead Cetaceans	Oppose	
13			Self	Oppose	
14			Self (Sick, submitted correspondence)	Did not Speak	
15			Self	Oppose	
16			Self	Support	
17			Self	Support	
18			Self	Oppose	
19			Self	Support	
20			Self	Oppose	s.22(1)
21			Self	Did not Speak	
22			Self	Did not Speak	
23			Self	Did not Speak	
24			Whale Friends	Oppose	
25			Self	Did not Speak	
26			Self	Oppose	
27			Self	Support	
28			Self	Did not Speak	
29			Self	Support	
30			Vanaquafacts	Oppose	
31			No Whales in Captivity (Withdrew)	Did not Speak	
32			Self	Support	
33			Self	Did not Speak	
34			Self	Oppose	
35			Self	Support	
36			Self	Did not Speak	
37			Self	Support	
38			Self	Oppose	
39			Self	Did not Speak	
40			Self	Did not Speak	
41			Self	Oppose	
42			Self	Oppose	(Registered 2x, see #20 - daughter Hilli)
43			Self	Did not Speak	
44			Self	Oppose	
45			Van Aquarium	Did not Speak	
46			Self	Did not Speak	
47			Vancouver Aquarium Marine Mammal Rescue	Support	
48			We Love This Coast	Oppose	
49			Vancouver Aquarium	Support	
50			Self	Oppose	



Park Board Meeting - Requests to Speak

Speaker Number	Last Name	First Name	Representing (individual / group / organization)	Position on Topic (support/ oppose/neutral)	Notes
51	s.22(1)		Self	Did not Speak	
52			Self	Did not Speak	
53			Self	Did not Speak	
54			Self duplicate	Did not Speak	s.22(1)
55			Self	Oppose	
56			Self	Did not Speak	
57			Self	Oppose	
58			Self	Support	
59			Self	Oppose	
60			Self	Oppose	
61			Self	Oppose	
62			Self	Did not Speak	
63			Self	Oppose	
64			Self	Oppose	
65			Self	Did not Speak	
66			Self (Request to speak after registration closed)	Support	
67			Self (Request to speak after registration closed)	Did not Speak	
68			Self (Request to speak after registration closed)	Oppose	
69			Self (Request to speak after registration closed)	Neutral	

11



the Jane Goodall Institute

WWW.JANEGOODALL.ORG

Vancouver Board of Parks and Recreation
Administration Office
2099 Beach Avenue
Vancouver, BC V6G 1Z4

May 13, 2014

Dear Park Board Chairman and Commissioners,

The capture, breeding and keeping of cetaceans world-wide has come under increasing public scrutiny due to recent high-profile stories being released from industry insiders. The scientific community is also responding to the captivity of these highly social and intelligent species as we now know more than ever, about the complex environments such species require to thrive and achieve good welfare. Those of us who have had the fortunate opportunity to study wild animals in their natural settings where family, community structure and communication form a foundation for these animals' existence, know the implications of captivity on such species.

I understand the Vancouver Park Board and the Vancouver Aquarium became industry leaders in 1996, when an agreement was made to not allow the keeping of cetaceans caught from the wild after September 16th of that year (with the exception of endangered species or rehabilitation animals that could not be released). However, the current permission of Vancouver Aquarium cetacean breeding programs on-site, and at SeaWorld with belugas on loan, is no longer defensible by science. This is demonstrated by the high mortality rates evident in these breeding programs and by the ongoing use of these animals in interactive shows as entertainment. The idea that certain cetaceans "do better" in captivity than others is also misleading, as belugas, dolphins and porpoises are highly social animals which can travel in large pods and migrate long distances. In captivity, these highly vocal and complex communicators are forced to live in a low-sensory environment, which is unable to fully meet the needs of their physical and emotional worlds.

As society at large and the scientific community now reflect on the keeping of highly cognitive species like primates, elephants, and cetaceans in entertainment and research, I ask the Vancouver Park Board and the Vancouver Aquarium to do the same. The phasing out of such cetacean programs is the natural progression of human-kind's evolving view of our non-human animal kin. I hope the Vancouver Park Board and the Vancouver Aquarium will be a leader in compassionate conservation on this issue, as you have done before.

Sincerely,

Jane Goodall, Ph.D., DBE
Founder, the Jane Goodall Institute &
UN Messenger of Peace

Enright, Danielle

From: s. 22(1)
Sent: Wednesday, March 08, 2017 6:46 PM
To: Park Board Meetings
Subject: MY FINAL VPB DRAFT

Good evening, Mr. Chairman and Park Board Commissioners. My name is s. 22(1)

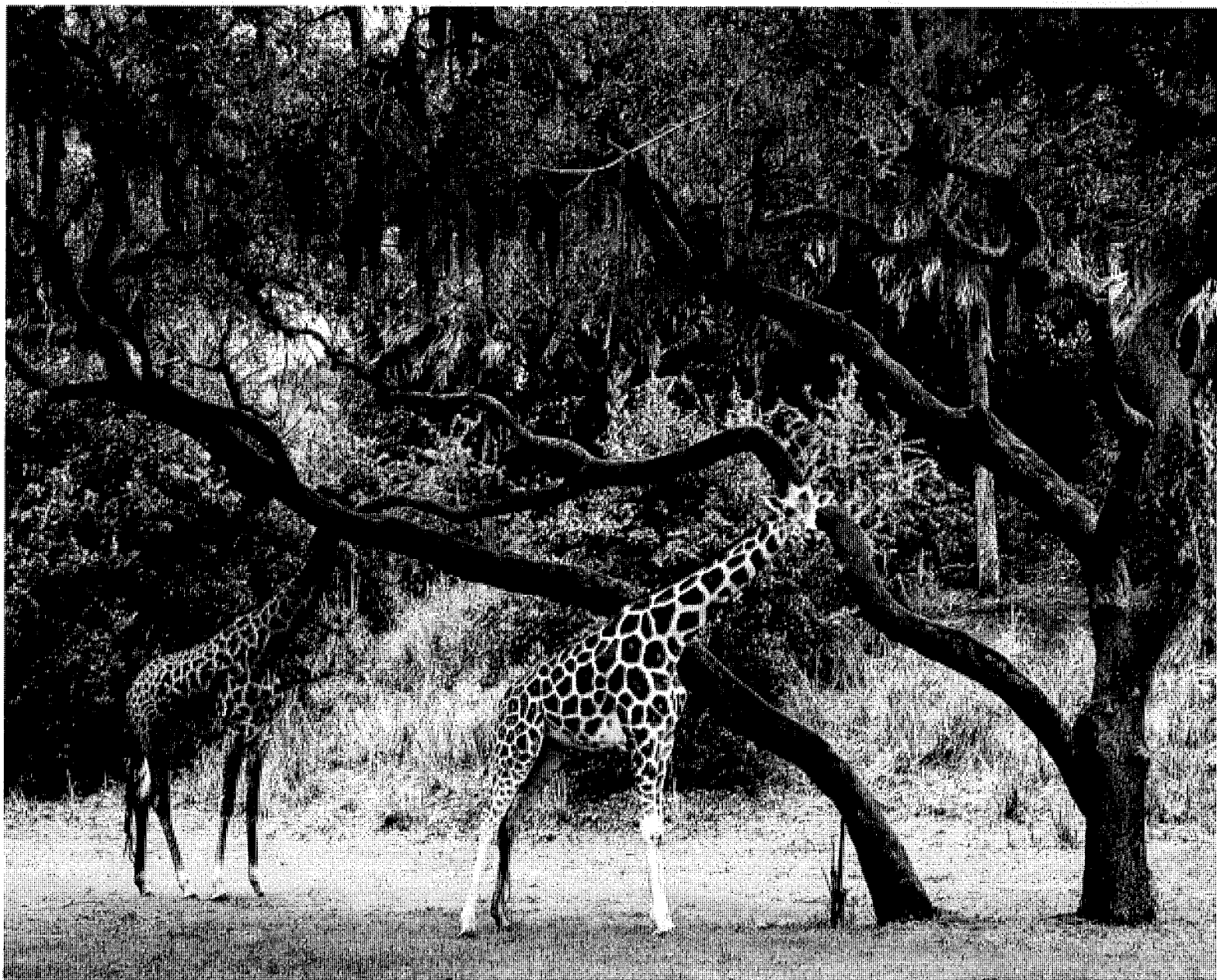
I'm nervous. NOT because of some fear of public speaking NOR because of any fear of being in the newspaper, on the radio or on TV.

I'm nervous because the fate of potentially dozens, even hundreds of cetaceans, WHO CAN'T SPEAK FOR THEMSELVES, rests with the ability of myself, as well as all of my colleagues (especially those in attendance here tonight), to persuade you -- in 3/5 short minutes, each -- that the captivity of whales, dolphins and porpoises at the Vancouver Aquarium is WRONG. Extremely tragic as the deaths of the last 2 belugas at Vancouver Aquarium last November were, that loss can -- and should -- make your decision to end the captivity of cetaceans at Vancouver Aquarium somewhat easier, since ZERO BELUGAS is, currently, the new 'status quo'.

How many of you have seen BLACKFISH? How many of you have seen THE COVE? How many of you have seen VANCOUVER AQUARIUM UNCOVERED? Damning of the entire captivity industry as all of those excellent films are, thoroughly covering the greedy, money-hungry brutality of the industry from the international level right down to the local level -- and everything in between -- perhaps the most damning evidence of all came from the Vancouver Aquarium's own beluga pool cam. I can't imagine how anyone -- whether they be a first time visitor to the Vancouver Aquarium's #1 cheerleader, John Nightingale -- could possibly watch that beluga pool cam for more than about 5 minutes...and say, "Yup, captivity is a wonderful thing!"

I have no clue about 'jurisdictional' matters but, whether it's the Vancouver Park Board, Vancouver City Council or, ideally, both, we need...

1. An immediate cease and desist order, regarding the construction of bigger concrete bathtubs for whales, dolphins and porpoises at the Vancouver Aquarium;
2. An immediate moratorium on the importation/deportation/transfer of any and all cetaceans to and from the Vancouver Aquarium, whether for performing purposes or not...the one and only exception to that rule, possibly, being IF the Vancouver Aquarium deems that any of its current cetaceans are eligible for release back into the wild;
3. An immediate moratorium on the breeding of any and all Vancouver Aquarium-owned cetaceans, regardless of where those cetaceans are currently (i.e., SeaWorld);
4. An immediate amendment to the "License Agreement"/"Lease"/"Cetacean Bylaw" (between the Vancouver Park Board and the Vancouver Aquarium), reflecting items numbered 1, 2 and 3, above; and
5. All of the above remains in effect until a **BINDING** plebiscite/referendum on the issue is conducted.



ARKS OF HOPE

AMBASSADORS FOR ANIMALS

The Pivotal Position of Zoos and Aquariums and Next Steps
in Ensuring the Welfare of Animals in Human Care



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ARKS OF HOPE AMBASSADORS FOR ANIMALS

The Pivotal Position of Zoos and Aquariums and Next Steps
in Ensuring the Welfare of Animals in Human Care

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EXECUTIVE SUMMARY

The world is in the middle of what experts believe is a sixth mass extinction, with a rate eight to 100 times higher than expected since 1900.^{1,2} While the previous five die-offs were driven by natural events such as the one that brought about the end of the dinosaurs (and also exterminated 75 percent of all species on the planet), the current mass extinction is driven by humans. An ever-expanding human population—which is expected to increase to 10 billion in the coming decades—has meant that there are fewer and fewer truly “wild” places left. This in turn has put pressure on both habitats and conservation efforts.

Animals enrich our planet, and our lives, and humanity has a moral obligation to preserve wild and endangered animals. In response to these challenges and duties, zoos and aquariums have become modern day arks of hope for many species. Zoos and aquariums not only fund thousands of conservation projects, but they are vessels themselves to safely house and help sustain populations of critically endangered animals.

People won't protect what they don't love and they can't love what they don't know. Zoos and aquariums are the ambassadors between wildlife and humans. According to the Association of Zoos and Aquariums, over 181 million people visit U.S. zoos and aquariums it accredits every year, which is more people than go to NFL, NHL, NBA, and MLB games combined.³ Globally, 700 million people visit zoos and aquariums every year, or about 10 percent of the world population.⁴ Zoos and aquariums are positioned today not only to take a leading role in conservation, but to educate the next generations about the importance of Earth's animals.

Zoos and aquariums don't just help us appreciate animals that we might otherwise never see in person. They also provide

vital research that helps these animals continue to exist on the planet and contribute to jobs and economies across the world.

Of the estimated 10,000-12,000 zoos and animal parks in the world, only an estimated 2.3 percent or less were accredited or recognized as of 2008.⁵ As we face 21st Century challenges in caring for the Earth and its creatures, zoos and aquariums—especially those accredited to meet professional standards—will play critical roles at every step. We must make sure that the outstanding work already being done by many facilities is recognized, that substandard institutions are improved or closed, and that more institutions worldwide are brought to the highest level for animal welfare.

While there are accreditation programs for zoos and aquariums, there has not been an effort devoted solely to verifying the welfare of animals in human care. Furthermore, in today's society where the public is skeptical and demands independent certifications, accreditation programs are based on older models such as those offered by trade membership associations where independence is certainly not assured nor guaranteed.

In contrast, American Humane Association's new Humane Conservation program offers an improved model that allows for independent, third-party certification of the humane treatment of animals in human care, based on rigorous science and evidence-based practices. Humane Conservation audit teams are independent from the institution, and the focus is solely on the humane treatment of the animals, and not other factors outside of animal welfare. With more and more Americans concerned about the treatment of animals, Humane Conservation certification standards are 100 percent focused on animal welfare, and have been developed by leading scientists and ethicists. It is the first program of its kind—the new gold standard for animals in zoos, aquariums, dolphinariums, and in human care.

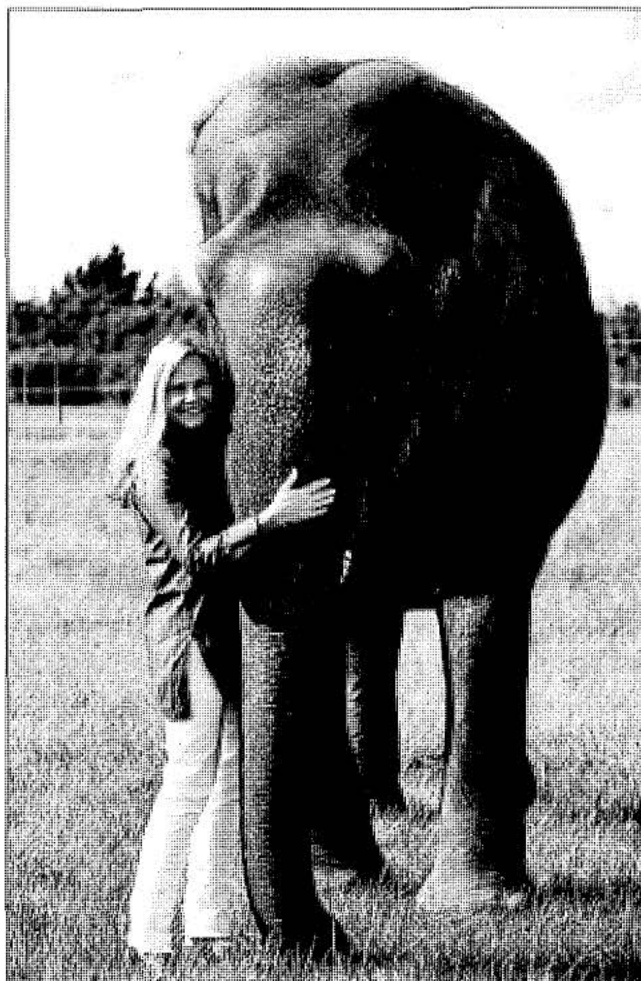
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To ensure the humane treatment of animals, we must bring new welfare certification systems into being that focus solely on the treatment and well-being of animals in our vital global network of zoos, aquariums, dolphinariums, and conservation centers. This task, as well as an in-depth examination of the value of the institutions that play the greatest role in preserving the world's disappearing species, is the subject of this paper.

Robin R. Ganzert

Robin R. Ganzert, PhD
President and CEO, American Humane Association



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BENEFITS

Animal Welfare

Zoos and aquariums care both about the animals in their care and broader populations through conservation. All animals should be treated humanely, whether they are in zoos and aquariums, households, on farms, performing service to law enforcement or the military, or anywhere else. Animal welfare is more than simply access to food, water, and shelter—these are just the basics. The “Five Freedoms,” the internationally accepted social contract with animals adopted by the Royal Society for the Prevention of Cruelty to Animals and animal welfare professionals worldwide, outline a more comprehensive consideration for animal welfare: Freedom from pain, freedom from hunger and thirst, freedom from discomfort, freedom to express normal behavior, and freedom from fear and distress.⁶

For zoo animals, “the truly important step is ensuring that conditions exist so each animal...has the potential to experience great welfare.”⁷ More than just meeting basic life needs, the emotional well-being of zoo (and aquarium) animals is paramount to animal welfare. Animals should be able to make choices: Where to spend their time, how to engage with environmental enrichments, and when to spend time with other animals.

In this context, zoos have developed handling programs and exhibits that provide for animals’ needs, changing in the past few decades to provide better habitats. The very first zoos provided barren environments for the animals. Many larger animals were kept in concrete enclosures with bars and little environmental enrichment. In these earlier generations of zoos, the focus was on the satisfaction of visitors, meaning “[t]he human field of vision became the standards measure...Small enclosures and cages may have robbed animals of a normal physiological

and psychological life and provoked stress and high mortality rates, but they ensured spectators a quick and certain sighting.”⁸ Beginning in the 20th Century, some environmental enrichments such as flora and rocks were used in enclosures.⁹ But even these environments left something to be desired.

Today, zoos try to mimic natural environments for the animals. Vegetation and open areas, combined with toys, climbing areas, and scent trails provide enrichment for the animals and an opportunity for visitors to see the animals engage in natural behaviors. Some zoos and aquariums use shows and public feeding demonstrations as attractions to engage animals and visitors.

Examples of environmental enrichment for zoo animals are many. The National Zoo in Washington, D.C. has the O-Line, a nearly 500-foot long, 50-foot high cable that allows orangutans to swing and walk between towers and the zoo’s Great Ape House.¹⁰ The Bronx Zoo has the Congo Gorilla Forest, a 6.5-acre area mimicking a Central African rainforest complete with more than 15,000 tropical plants. The Dallas Zoo’s Wilds of Africa is a 25-acre area with several different habitats, from bush to woodlands. The Mystic Aquarium in Connecticut has one of the largest habitats for beluga whales in the world.

In addition to providing animals rich lives, zoos and aquariums have also improved the health care for and medical treatment of animals. Zoos are living longer, and animals are provided preventive health plans that include prescriptions and procedures such as those afforded to humans, including CT scans and anti-inflammatory medication.¹² As a result, animals can live longer, healthier lives than their forebears did in the wild. For instance, Shedd Aquarium in Chicago has an 85-year-old Queensland lung fish named “Granddad.”

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Looking forward, researchers have encouraged some changes to benefit the animals. Strengthening the existing relationship between zoos and aquariums and university graduate departments and behavioral analysts can promote animal welfare improvements by increasing our understanding of species behavior. This can be especially helpful as behavioral problems may result from animal welfare problems.¹³ Meanwhile, a researcher with the Zoological Society of London, noting that marine mammals such as dolphins and sea lions have cognitive skills close or equal to great apes, has suggested cognitive challenges such as obstacle courses be introduced to help stimulate animals in aquariums and provide further enrichment.¹⁴

Researchers with the Detroit Zoological Society's Center for Zoo Animal Welfare have outlined the framework for zoos to consider animal welfare.¹⁵ The framework includes institutional philosophy and policy, or an institution's goal to ensure animals are thriving, not just surviving; programmatic structure and resources; execution of the framework; and evaluation, or a means from within or without an institution to evaluate animal well-being using science-based criteria.

In building on this framework, we believe one thing must be emphasized: Third-party evaluation. As discussed below, the public yearns for transparency, whether in consumer products, food production, or governance. The same is true with animals in human care.

Conservation and Research

Wild animals face threats to their habitats and to their existence. Today, there are very few "natural" places left. Antarctica and small parts of Africa and the Amazon basin are the only true wild places, meaning they are generally untouched by human activity, remaining on Earth.

As humanity's numbers have grown to more than 7 billion—and are expected to keep growing to 10 billion in the coming decades—people are increasingly encroaching on wild spaces to the detriment of wild animals. Tiger habitat has been lost to rice fields and aluminum mining;¹⁶ lions and other big mammals face pressure from agricultural expansion in Africa.

A major purpose of zoos and aquariums is to promote the conservation of animals. To this end, these institutions conduct major, global research efforts that span everything from biological sciences such as genetics to in-the-field research to research of institutions' effectiveness at educating its constituents.¹⁷ Zoos and aquariums may sponsor research or fund journals; hold symposiums to disseminate research; or conduct research internally with or without partners. There are five academic journals dedicated to zoos and aquariums: *Zoo Biology*, *Journal of Zoo and Aquarium Research*, *Der Zoologische Garten* (the official journal of the *World Association of Zoos and Aquariums*), *Journal of Zoo and Wildlife Medicine*, and *International Zoo Yearbook*.

Conservation

The International Species Information System estimates that 82 percent of all new mammals, 64 percent of birds, and a majority of reptiles are born in captivity. "The survival of many of the world's species," it notes "rely on their ability to reproduce in captivity – for some, zoo populations may be all we have left."¹⁸

Institutions accredited by the Association of Zoos and Aquariums—which only account for 230 out of over 10,000 zoos, aquariums, and animal parks in the world—contributed \$160 million to 2,650 conservation projects in 130 countries in 2013.¹⁹ For butterfly conservation alone, a partnership of zoos spent \$2 million between 2010 and 2013.²⁰ Zoos are also involved in collaborative breeding programs.

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The programs are science-based and rigorous. Zoos share genetics, ancestry, and other information on individual animals in order to have the most robust program for breeding.

Zoos are responsible for a number of programs to reintroduce species to the wild, using breeding to build up a healthy population of animals. The Phoenix Zoo, with funding from the World Wildlife Fund, successfully reintroduced the Arabian Oryx to the wild. Breeding is being used to bolster wild populations of the Whooping Crane; one of the three primary facilities is the Calgary Zoo.²¹ The Black-Footed Ferret and California Condor have been reintroduced into the wild through a partnership between state and federal U.S. agencies, zoos, and other non-governmental organizations.^{22,23} Meanwhile, the National Zoo helped lead reintroduction of the golden lion tamarin, which has helped increased the wild population from 100 in 1991 to 1,000 in 2012.²⁴

Other success stories include Partula snails, the European bison, Przewalski's horse, the red wolf, and the Oregon spotted frog.^{25,26}

Zoos and aquariums have also built centers for research and propagation of species. The Pittsburgh Zoo & PPG Aquarium created the International Conservation Center (ICC), a 724-acre facility in Somerset County, Pennsylvania and will provide an opportunity for research and breeding of elephants.²⁷ The ICC eventually plans to add cheetahs, zebras and rhinos.²⁸ The Houston Zoo founded the El Valle Amphibian Conservation Center in Panama, which works to conserve local amphibian species that have been disappearing at an alarming rate.²⁹

Broadly, the International Species Information System is a network of close to 1,000 zoos and aquariums in 90 countries that share information about animals in their care, in-

cluding medical and husbandry records. This information-sharing allows institutions to control the genetic makeup of their facilities and find appropriate breeding animals to propagate species while maintaining genetic diversity. It also allows zoos and aquariums to connect with other institutions that have experience raising or studying certain animals. Over 40 years, the International Species Information System has shared data on 6.8 million animals covering 21,000 species. Nearly a quarter (about 23 percent) of the species in zoos that are a part of the International Species Information System network are threatened.

Along with hands-on work, zoos and aquariums are frequent contributors to the literature on conservation. A review of published articles in Conservation Biology found that nearly one in ten (8.3 percent) had an author with a zoo or aquarium affiliation.

Other Research

Zoos also provide a base of operations for research into infectious and zoonotic diseases, and other matters. Zoo research, according to the St. Louis Zoo, provides opportunities for scientists to:

- *Conduct clinical, nutritional, pathological and epidemiological studies of diseases of conservation concern*
- *Monitor diseases in free-living wild animals where they interface with domestic animals and humans*
- *Perform studies that contribute to the field of comparative medicine and the discovery of life forms, from invertebrates and vertebrate species to parasites and pathogens*

The St. Louis Zoo established the Institute for Conservation Medicine (ICM) in 2011. The role of the ICM is to

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help scientists “study the origin, movement and risk factors associated with diseases so they can better understand the impact of diseases on the conservation of wildlife populations; the links between the health of zoo animals and free-living wildlife populations; and the movement of diseases between wildlife, domestic animals and humans.”³³ Zoonotic diseases have accounted for 75 percent of all emerging infectious diseases among humans over the last few decades, according to ICM’s director, making the center’s work vital to both animals and people.³⁴

Research can yield benefits to humans, as well as to our wild neighbors. The St. Louis Zoo and the University of Missouri’s College of Veterinary Medicine examined the health benefits of zoos to people, including reduced stress, lower blood pressure, and increased energy.³⁵

One major frontier in zoo research is the area of intelligence. The Think Tank at the Smithsonian National Zoo in Washington, D.C. provides an exhibit for visitors to discuss the intricacies of what defines intelligence and thinking. The Think Tank also conducts research on memory in orangutans and cognition and emotional state in apes.³⁶

Zoo Atlanta supports research at its facility as well as at zoos in China to learn more about Great Pandas, including that on reproductive behavior, the effects of transporting pandas from China to the United States, and foraging behavior. The zoo also runs the Great Ape Heart Project, aimed at studying the cardiovascular health of gorillas, orangutans, chimpanzees and bonobos.³⁷

Zoonotic diseases including West Nile virus, salmonella, and Lyme disease are the subjects of numerous zoo research projects. The San Diego Zoo has a staff of nearly 20 dedicated to combatting wildlife disease and removing it as a

barrier to conservation. The Cleveland Metroparks Zoo has researched treatments for iron-storage disease in Egyptian bats and monitored disease in the deer herds that frequent the park. The Zoological Society of London is developing methods to assess the risk of disease occurrence during relocation and reintroduction of animals to the wild.³⁸

Looking Forward

Zoos and aquariums can help with a number of key problems in the future. Issues include diseases and biosecurity; global water shortages and food insecurity; markets for wildlife products; the need for simultaneous and integrated management of animals in the wild and in human care; the impact of political instability and human conflict on wild animal populations; and the need for animal preserves.³⁹

Zoos and aquariums are already addressing some of these issues. Pittsburgh Zoo and Aquarium’s development of a reserve for elephants in Pennsylvania will serve as a tool to promote conservation breeding. This reserve could also serve as a refuge for imperiled elephants in the wild, such as those in Swaziland, where there are too many elephants for the amount of land, and where the government has offered to ship elephants to American zoos.⁴⁰

Freshwater fish also face challenges, according to researchers affiliated with the International Union for the Conservation of Nature. Only 0.3 percent of the available water in the world is in lakes, ponds, rivers, fresh water estuaries, and wetlands, yet these areas support about 50 percent of all fish species. Freshwater areas face threats from pollution, over-fishing, invasive species, and habitat loss and modification. Public aquariums can help educate the general public and visitors through their marketing and exhibit materials; help develop conservation policies that involve many stakeholders; encourage the application and enforcement of conserva-

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tion laws; support breeding in facilities; and support habitat restoration and species reintroductions in the wild.⁴¹

Zoos and aquariums are vital and necessary partners for multi-stakeholder programs benefitting conservation and biodiversity

Economic Impact

We believe animals improve and enrich our lives physically, emotionally, spiritually, and in many other ways. In fact, zoos have often been an important part of civilization and modern urban development. For centuries in Europe, “zoological gardens often formed part of the urban renovation programmes being implemented...and characterized by the creation of broader streets, boulevards, squares and embankments to ease the movement of people and good, to open out horizons, to encourage people to wander a little and look at monuments, and to improve air circulation and the general quality of life.”⁴² These parks were often established in wealthy areas of cities, and when established on the outskirts of town accelerated or drove those areas to become residential zones for aristocracy and bourgeoisie. While many facilities restricted admittance to the wealthy, over time, zoological gardens became more accessible to other classes starting in the second half of the 19th Century.

Today, zoos and aquariums are important assets to their communities—of all economic stripes. They serve not only as educational opportunities, but in many cities, as huge economic boons. **A study of AZA members calculated that they support 142,436 jobs in the U.S. and 10,840 internationally (for only 11 international members). In 2012, nearly 170 million people visited zoos and aquariums in the United States – that’s more attendance than the NFL, NHL and MLB combined. Together, zoos and aquariums contributed almost \$20 billion to the U.S. economy in 2012.**⁴³

Worldwide, more than 700 million people visit zoos and aquariums every year.⁴⁴ There are more than 300 substantial public aquariums across the globe, with more than 100 opening since the early 1990s. The expansion of aquariums is “often associated with the multi-million dollar regeneration of cities, docklands and other run-down, previously industrial areas. Such large-scale investments bring about highly beneficial economic, employment and social impacts.”⁴⁵

Tourism Dollars

In more than a few cities, zoos and aquariums serve as the main driver of tourism dollars, bringing people into town, who then spend money at other establishments. According to a study commissioned by the Association of American Zoos and Aquariums (AZA), **people who visited zoos and aquariums spent an additional \$2.4 billion before and after their visit at surrounding businesses.** In Memphis, for example, two-thirds of out-of-town visitors – more than 300,000 – went to the city primarily to visit the Memphis Zoo, according to a University of Memphis study.⁴⁶

Similarly, the National Aquarium in Baltimore (NAIB) has helped to revitalize the city’s downtown area by attracting more than 1.5 million visitors annually, according to an economic impact study conducted by Sage Policy Group. Maryland Governor Martin O’Malley called the aquarium “a driving force for our state’s economic engine.”⁴⁷ Baltimore Mayor Stephanie Rawlings-Blake said the aquarium “is an institution that has helped the city grow and thrive.”⁴⁸

Almost 90 percent of NAIB visitors cited the aquarium as their primary reason for visiting the city. The average tourist on a day-trip to the aquarium spent \$109.80, while an overnight visitor spent \$372.18 per trip.⁴⁹ The researchers estimate that visitors to the NAIB spend more than \$205 million per year on things like food, lodging and transportation.

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The Tennessee Aquarium in Chattanooga has been credited as the driving force behind the downtown area's revitalization over the last two decades. When the world-class aquarium was being built in the early 1990s, it was seen by residents and tourists alike as a beacon of hope for the economically struggling city.⁵⁰ The aquarium continues to fuel growth in the city's downtown, contributing a more than \$101 in million annual impact.⁵¹ In 2014, the aquarium drew 710,513 out-of-town visitors to Chattanooga, with the average family spending \$710 for an overnight stay. Area businesses see an increase of \$67.7 million as a direct result of goods and services purchased by aquarium visitors. One paper calculated an economic benefit of aquariums by studying day trips, and determined these trips brought economic activity that otherwise would not have occurred.⁵²

The Phoenix Zoo has also played a significant role in bolstering the economy of Arizona since it opened its doors in 1962. In 2012, the zoo contributed an additional \$92 million to economic activity in the local area.¹ In 2012, 183,000 people visited the Lincoln Children's Zoo in Nebraska, pumping an additional \$6.31 million into the local economy.⁵³ The Vancouver Aquarium contributes \$43 million in economic output annually.⁵⁴ The Brookfield Zoo in Chicago generates \$150 million in economic activity every year and supports 2,000 jobs.⁵⁵ And the Georgia Aquarium has contributed \$1.9 billion to the state's gross domestic product and has helped drive \$1.7 billion in new investment in Atlanta since 2005, drawing more than 1 million visitors from out of state annually.⁵⁶

Employment Opportunities

Zoos and aquariums are very large operations, and as such, require large staffs with diverse skillsets to keep them up and running. Aside from day-to-day operations, construction crews are also needed to build and expand operations. Each year, according to the AZA study, zoos and aquariums in America generate personal earnings upwards of \$6.4 billion and support 193,986 jobs.⁵⁷

The size and complexity of zoo and aquarium operations require the services of both full- and part-time workers. The NAIB directly employs 2,257 full- and part-time employees, and also supports another 279 jobs throughout the city through the purchase of services provided by area businesses to support aquarium operations. The aquarium supports an additional 378 jobs in Baltimore City by enhancing spending in the local economy, according to the Sage study.⁵⁸

The Minnesota Zoo is in the process of completing a five-year expansion project that will completely transform many of its exhibits and create several new ones. According to a study conducted by researchers at the University of Minnesota, the new construction will create 680 temporary jobs at a cost of \$103.4 million.⁵⁹

Between 2000 and 2007, Louisville's nature attractions saw an increase in payroll expenses of 49 percent – due primarily to the Louisville Zoo, which had a 16 percent increase in earned revenue.⁶⁰

Reliable Tax Base

The sheer size of zoos and aquariums and the permanence of their structures make them a reliable tax base for the municipalities they call home. The NAIB contributes \$11.7 million in annual tax revenue to the state of Maryland and an additional \$5.9 million to the city of Baltimore. Similarly, the Magnetic Hill Zoo in Canada's New Brunswick province contributes \$1 million in tax revenue to the federal government and another \$800,000 to the provincial government.⁶¹ Each year, the Chattanooga Aquarium contributes \$6.3 million in tax revenue for the city of Chattanooga and Hamilton County.⁶²

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In so many ways, these institutions, which are significant investments in the care and future of the world's animals, also pay handsome dividends to the communities in which they reside.

Education

Zoos and aquariums draw 181 million visitors a year in the United States, which is over half the population, and an estimated 700 million worldwide. According to the AZA, **most U.S. visitors are between the ages of 25 and 35, a prime demographic. Not only are these people future leaders of the country in promoting conservation, but they are often parents who can teach the next generation about the value of conservation.** Two-thirds of adults who visit zoos do so with children, as do half of adults who visit aquariums.

It's not just foot traffic that zoos attract. In August 2015, the National Zoo's "Panda cam" drew 868,000 views in one weekend after a panda gave birth to twins.⁶³ Visitors to the zoo also increased by 15 percent the year a panda was born.⁶⁴ While pandas are an iconic image of zoos—and the importance of conservation—they aren't the only draw. A general increase in interest in exotic animals is correlated to an increase in the number of zoos.⁶⁵

Zoos also are able to educate visitors about the threats to species. As understanding of threats increase, visitor attitudes towards these species improve.⁶⁶ In fact, "visits to zoos and aquariums almost always result in enhanced scientific understanding and strengthened beliefs in the value of nature conservation."⁶⁷

How zoos do this is a matter of study and ongoing refinement. The National Zoo, for instance, has a tug-of-war game that visitors can play with an orangutan. But

it's also important to make sure these enrichments are improving the educational experience for visitors.

One study examined visitors to Zoo Atlanta viewing an animal training exercise with otters, performed by zoo staff with interpretations for the audience. The research concluded that exposing audiences to animal training increased visitor satisfaction and the amount of time they spend at exhibits.⁶⁸ The Edinburgh Zoo provides an opportunity for visitors to watch ongoing primate research. A review of this design found that it increased visitor engagement.⁶⁹

Good zoos and aquariums are more than just places where animals are on display. They are places where animals and humans can engage.

Efficacy

How effective are zoos and aquariums at educating the public? The AZA conducted a three-year study in the United States to determine the impacts of visiting zoos and aquariums.⁷⁰ Conducting surveys of thousands of visitors, they were able to determine that zoos and aquariums help reinforce visitors' values and attitudes and cause visitors to see themselves as part of the solution to environmental and conservation issues. Importantly, the benefits lasted. Months after their visit, 61 percent of visitors questioned by researchers were able to talk about what they learned from their visit, and 35 percent said their visit reinforced beliefs about the importance of animals and conservation.

Research also indicates that visitors to zoo and aquariums value these institutions more and more for the education and conservation benefits, rather than solely as a place for entertainment. For most

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visitors, learning was one of the top reasons for visiting a zoo or aquarium, and animal welfare—knowing that animals were well cared for and kept in enriched environments—as well as experiential factors contributed most greatly to their satisfaction with a visit. Seventy-four percent of respondents indicated that an institution’s role in promoting conservation and environmental issues was at least as or more important than an institution’s role in providing a fun time.⁷¹

British researchers, in conjunction with the World Association of Zoos and Aquariums (WAZA), examined the effectiveness globally of zoos and aquariums in contributing to visitor understanding of biodiversity—a goal laid out in the United Nations’ Aichi Biodiversity Targets. After surveying more than 5,600 visitors in 19 countries, they measured a significant increase in understanding of biodiversity and actions they could take as individuals to protect biodiversity.⁷²

Aquariums also engage and encourage individuals to use their purchasing power to effect change in a way that benefits endangered species. Aquariums around the country are promoting campaigns to support “sustainable seafood.” These initiatives are intended to address overfishing, water pollution, and other environmental issues that arise from seafood cultivation and harvesting. Due to the wide range of problems they’re meant to solve, sustainable seafood initiatives are often multifaceted in nature.

The Monterey Bay Aquarium in California, for example, runs a program called “Seafood Watch,” which rates seafood and sushi on a three-tier scale: “Best Choices,” “Good Alternatives,” and “Avoid.” The best are those “caught or farmed in ways that cause little harm to habitats or other wildlife,” while the worst involve species that are overfished or caught/farmed in harmful ways.⁷³

These seafood ratings are released to influence consumers in the store. Since 1999, the aquarium has distributed more than 56 million consumer guides featuring its ratings and launched an app that has been downloaded more than 1.5 million times. Through “Seafood Watch,” the aquarium has partnered with more than 400 aquariums, nonprofit organizations, and food suppliers to promote sustainable seafood harvesting and consumption.⁷⁴

They are not alone. Shedd Aquarium in Illinois is known for its “Right Bite” program, the leading sustainable seafood program in the Midwest. It involves research projects on Great Lakes fisheries, regular conferences with restaurant and food service professionals, and Fish of the Month recipe promotions among other initiatives. The aquarium is also one of Monterey Bay Aquarium’s most vocal partners. New England Aquarium is another: It promotes sustainable seafood on its website, offering “ocean-friendly” seafood options, recipes, and events at local restaurants.⁷⁵

Aquariums also have opportunities to promote sustainability in the pet fish trade, which in turn promotes the health and conservation of populations in an industry that trades in more than 1,000 species and imports 190 million animals annually. Writing in *Zoo Biology*, authors from the New England Aquarium and other institutions argue that public aquariums are in a unique position to promote sustainability in several fields. As nonprofits, aquariums are more likely to be trusted than businesses in the aquatic pet trade; as such, they can develop social media campaigns or market-based initiatives to help ensure best practices are used by businesses. Aquariums have the technical and scientific expertise to suggest improvements in the transportation and breeding of fish. And finally,

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aquariums can also offer an educational message to their own visitors—many of whom are interested in keeping pet fish.⁷⁶

Culture

Zoos and aquariums are important institutions in American culture. Far from the private menageries of exotic animals of the past that were showpieces of the upper class, today's organizations have a role that serves both society and animals. These institutions "encourage visitors to care for natural resources, maintain local habitats for wildlife and participate in local community-based efforts to restore and protect the environment."⁷⁷

Zoos also provide for bonding in families and development of children. One study of zoo visitors found that parents, even if they don't like zoos that much, appreciate the time they allow them to spend with their children. Zoos also provide a way for urban parents to take their kids to see animals firsthand while living in an environment with limited access to the natural world. Visiting a zoo provides an opportunity to develop a child's moral compass by teaching children how to be "good citizens of the world." The benefits aren't limited to children: Parents who had personal issues with abandonment benefited from appreciating the "family" groups of zoo animals.⁷⁸

Zoos benefit not just visitors but those who work there. Volunteering at zoos provides an important outlet for people who view conservation as part of their personal identity.⁷⁹ Zoos and aquariums as institutions provide opportunities for people with similar values to meet and collaborate.

Zoos also bring cultures together. International collaboration on conservation projects is regular, especially

as zoos and aquariums focus on *in situ*, or in the wild, work such as habitat preservation or restoration. Cross-cultural collaboration is a necessary result of the global effort to protect species.

Such efforts increase tourism, as well. The Ninoy Aquino Park and Wildlife Center, which operates a "mini-zoo," receives 400,000 tourists a year, whose payments for admission and parking help fund the Center's work.⁸⁰ Zoo tourism can bring local zoos together with international partners, can raise funds for zoos, and can bring benefits for conservation by involving breeding and reintroduction of animals to the wild for tourists to see.⁸¹

The Need for Accreditation and Animal Welfare Certification

Zoos and aquariums do worlds of good for global conservation. Yet, AZA-accredited institutions only amount to 230 out of more than 10,000 zoos and animal parks worldwide—or just 2.3 percent. In an age when consumers demand transparency and third-party verification, most zoos and aquariums are lagging behind the times.

Unfortunately, the lack of common accreditation opens the door for those who would remove animals from our lives to paint a misleading picture of zoos and aquariums with a broad and ill-informed brush. People for the Ethical Treatment of Animals (PETA), for instance, refers to zoos and aquariums as "prisons" and calls for their closure. Certainly there are examples of zoos and aquariums that fail to maintain high standards. Zoos in conflict areas face the dangers of violence and under-funding. The Kiev Zoo was expelled from the European Association of Zoos and Aquaria in 2007 over poor conditions for animals and has been linked to financial malfeasance. In the United States, so-called "roadside" zoos may lack resources and proper environmental enrichments for their animals.

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However, as this paper lays out in detail, zoos and aquariums provide vital roles. Researchers believe that the world is in the midst of a sixth mass extinction. According to the World Wildlife Fund, global populations of vertebrates dropped 50 percent between 1970 and 2010.⁸² According to the IUCN, nearly 25,000 species globally were considered threatened in 2015. Moreover, the trends are not encouraging. Mammals, birds, and amphibians have all been faring worse on the IUCN Red List index of species survival. Without zoos and aquariums, a number of species that are success stories—such as the California condor, the European bison, Przewalski's horse, and the red wolf—might instead be history.

While groups such as PETA have an ideological opposition to animals living in any institution or even in individual human care as pets, this dogma ignores key realities. Most zoo animals are born in zoos. They don't have the means to live successfully in the wild, but they do have the ability to sustain their species under human care.

Keeping some animals in zoos and aquariums serves to help the entire species. Therefore, we should support the best actors and encourage other institutions to meet best standards.

Importance of Third-Party Certification

Third-party certification can make the difference between consumers trusting a product or service and forcing them to look for alternatives. For instance, according to a 2011 survey from the Food and Drug Administration and other government agencies, consumers have a “high positive attitude” toward certified food products. The national survey found

that a majority of Americans believe they are safer than their non-certified counterparts.⁸⁴

One reason is the public's general skepticism, especially of business. According to Edelman's most recent Global Trust Barometer, only 53 percent of people across the globe trust business leaders, with more than two-thirds claiming CEOs focus too much on short-term financial results compared to other objectives.⁸⁵ Meanwhile, a 2015 Gallup poll is even more striking: Fewer than nine percent of Americans trust corporations a “great deal,” while a mere 12 percent trust Big Business “quite a lot.”⁸⁶

Consider also the characteristics of millennials. Pew found that only 19 percent of millennials say most people can be trusted. And polling from Harvard discovered that a significant majority of millennials expressed distrust of the press (88%), Wall Street (86%), the federal government (74%); and so on for other institutions.

Third-party validation by a trusted organization with verifiable and impartial science-based systems can do much to earn and deserve the confidence that an institution is meeting the humane standards rightly demanded by the public. American Humane Association, a 140-year-old humane organization that has been at the forefront of virtually every major advance in the protection of children and animals, and is the largest certifier of animals in working environments, has taken it upon itself to develop strong, science-based standards for the humane conservation of animals in humane care at zoos, aquariums, dolphinariums, and conservation parks. Developed by

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independent, respected veterinarians and experts in the fields of animal welfare, animal science, zoology, and ethics, these standards will serve as a benchmark of humane care to which institutions can aspire, providing verification of good practices at deserving zoos and aquariums, and long-overdue assurances that the public can support in good conscience as those of us who love animals seek to enjoy and preserve the rich web of life essential to the survival of Mankind – and all the creatures of the Earth.

Conclusion

Far from being the private menageries of the past, which captured wildlife for private viewing and pleasure, today's zoos and aquariums operate for the benefit of the public and the animals for which they care. Animal welfare, conservation, research and education are the missions of these

institutions, and many are succeeding in their goals, but there still is a long way to go, with room for change and growth, in solving the challenges faced by Earth's creatures.

The American Humane Association launched the Humane Conservation certification program for zoos and aquariums to drive improvement among these institutions. The Humane Conservation Certification Program is the only certification program focused 100 percent on animal welfare administered by independent third-party auditors. American Humane Association is the oldest national animal welfare group in the United States, and its expertise and independence will be a powerful force in the future success of zoos and aquariums – one that will provide benefits to both animals and people.

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WHAT THE EXPERTS SAY

"WWF has long supported the legitimate role of zoos in conservation, education, and research. Captive breeding programmes managed by zoos can provide positive benefits for species conservation if designed and used appropriately, and if they are part of a science-based conservation management plan for the species. Such programmes may act as a platform for zoologists, veterinarians and others to conduct research designed to enhance understanding of the biology of the species."

—*World Wildlife Fund position statement*

"[M]ost kids first learn about wildlife from their local zoo. The very best zoos not only focus on wildlife education, but conservation of endangered species via captive breeding and responsible re-introduction programs."

—*Joan Embery, animal and environmental advocate*

"Every aquarium and zoo I work with believes its mission includes raising awareness about the challenges faced by animals around the world. We know animals have the power to touch our hearts, and when this happens, it opens the door to education that can inspire people to participate in protecting animals and conserving their environments."

—*Jack Hanna*

"All in all with the ongoing global threats to the environment it's hard for me to see zoos as anything other than being essential to the long-term survival of numerous species. Not just in terms of protecting them and breeding them for reintroduction, but to learn about them to aid those still in the wild, as well as to educate and inform the public about these animals and their world."

—*Dr. Dave Hone, paleontologist*

"Zoos have an essential role in conservation."

—*Christina Russo, Ph.D.*

LEADING EXPERT ENDORSEMENTS

"Beginning in the 1970s, society became increasingly aware of the ethical issues arising in animal use. Matters never even considered in the past have achieved major prominence. These issues range from the use of animals in food production and scientific research to their use in entertainment. American Humane Association pioneered assuring the well-being of animals used in cinema production. Now the organization is turning its attention to animals kept in zoos and aquaria, an area that has again elicited major social concern. The auditing standards developed by American Humane Association represent a robust and salubrious beginning to regulating these operations."

—*Bernard E. Rollin, PhD, University Distinguished Professor, Colorado State University*

"I endorse the American Humane Association's Humane Conservation certification program. This is entirely aligned with the veterinary profession's mission to be certain that animals used for the purposes of benefiting animalkind and humankind are treated with highest levels of humane welfare care and health care. No entity has done more to reduce suffering and inhumane treatment or prevent and treat disease than the veterinary profession and American Humane Association."

—*Joe M. Howell, DVM, Past President and Chairman of Board, American Veterinary Medical Association, and Current President, Western Veterinary Conference*

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"I applaud American Humane Association for this tremendous program to certify the humane treatment of animals in our zoos and aquariums nationwide. This unique program is especially exciting as accreditation programs run by membership organizations are peer-reviewed and can often be influenced by politics and favoritism. The American Humane Association program is unique in that it offers the first third-party, independent review and certification. This is definitely needed in our industry, as we all work to improve the level of care of animals."

—*Barbara Baker, DVM, President & CEO, Pittsburgh Zoo & PPG Aquarium*

"The Chicago Zoological Society/Brookfield Zoo fully endorses the American Humane Association Humane Conservation program. The world's zoos and aquariums lead the efforts to develop the highest standards of welfare for animals under professional care through science based research. Having the most honored and prestigious humane organization in the world act independently to evaluate and certify those efforts and results will tremendously aid in bringing about a renewed confidence by the public in our work and relevancy as centers of education and conservation."

—*Stuart D. Strahl, Ph.D., President and CEO, Chicago Zoological Society/Brookfield Zoo*

"I have been associated with domestic and exotic animals since the 1960's and professionally for the past 45 years. I am continually impressed by the commitment of the American Humane Association and their dedication to ensure the humane treatment of animals in the care of humans. Their staff is talented, passionate and

absolutely dedicated to providing the highest levels of science-based animal management in the design of their certification programs. I express my respect and gratitude to American Humane Association for their leadership and scientific approach in the development of this new Humane Conservation initiative for animals in the world's zoos and centers of conservation."

—*David R. Blasko, Director of Animal Care, The Mirage Hotel and Casino*

"Every animal in a zoo, aquarium or marine park deserves humane treatment and care. American Humane Association's exciting Humane Conservation Initiative, with its independent audits, science- and evidence-based standards, and the organization's more than a century of experience provides added assurance of the humane treatment and welfare of animals in zoological settings throughout the world."

—*Kathleen Dezio, President & CEO, Alliance of Marine Mammal Parks & Aquariums*

"The American Humane Association Humane Conservation certification program ensures the highest standards of animal welfare for animals in professional care at zoos and aquariums. This lays the foundation for continued and future efforts for zoos and aquariums to learn as much about the animals in their care as possible through research in order to help conserve species in the wild, and to educate and engage the public in conservation of species and their habitats."

—*Tracy Romano, Ph.D., Chief Scientist & Vice President of Research, Mystic Aquarium*

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"I fully endorse the American Humane Association Humane Conservation program. Animal welfare should be a priority for modern zoos and aquaria, and the American Humane Association program, which is based on science and best practice, will make an important contribution to develop and implement animal welfare standards in zoological institutions. This will in turn help them realize their education and conservation roles."

—Xavier Manteca, Ph.D., Professor, School of Veterinary Science, Autonomous University of Barcelona, Spain

"Zoos and aquaria offer people the opportunity to meet a variety of animals up close and personal. These animals are true ambassadors for their species in nature. Human beings will only protect what they love, and they will only love what they know. They will only know what they are taught: Zoos and aquaria teach people about animals, their needs and the need for their conservation. The fact that American Humane Association is willing to champion a program to assess the welfare of animals who call zoos and aquaria home is a testament to the importance of these facilities and their required survival."

—Kathleen Dudzinski, Ph.D., Director, Dolphin Communication Project

"The new Humane Conservation program is a unique and bold initiative for ensuring animal welfare in zoological institutions. This program will honor institutions that consider animal welfare and humane practices as a fundamental part of their daily operations and existence, while raising the bar of expectations for all zoological institutions. Wildlife and the humans who care for them will inevitably benefit from this program and the humane standards that it establishes."

—David S. Miller, DVM, Ph.D., DACZM, Consultant

"I think it is fantastic news that American Humane Association, one of the most highly recognized animal welfare advocates in the world, has launched the Humane Conservation certification program. As Mahatma Gandhi said, 'The greatness of a nation can be judged by the way its animals are treated,' and it is great news that the American Humane Association has decided to support another great step forward with this program and provide tools to recognize excellence and the best animal care standards in selected zoos and aquaria. This new animal welfare certification audit is dedicated to verifying humane and ethical treatment for all animals maintained in zoos and aquaria. American Humane Association's commitment to fighting for animals and ensuring professional care for animals is a welcome addition to our existing efforts. American Humane Association will provide tools to evaluate and assess the best animal care practices and procedures and we are grateful for their efforts and commitment to develop this incredibly important initiative. A key component of this new accreditation program is a focus on the well-being of each individual rather than other indirect indicators of welfare. We believe in any case, it is critical to use scientifically validated criteria to determine animal welfare rather than impressions or opinion. The professionals involved in this new Humane Conservation Scientific Advisory Committee are animal care experts putting all together over 500 years of experience in the zoo and aquarium fields."

—Daniel García Párraga, DVM, DECAAH, DECZM (Zoo Health Management), Director of Animal Health, Oceanogràfic Valencia

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"I wholeheartedly endorse the American Humane Association's Humane Conservation certification program. This program will assure the humane treatment and welfare of animal's living in our zoos and aquaria."

—*Jim McBain, DVM, Veterinarian Consultant*

"Kudos to American Humane Association for initiating a program to assure the well-being of animals in managed-care conservation venues. In private practice my husband and I provided veterinary care for animals ranging from gerbils to elephants. We have been able to offer our children and grandchildren unique opportunities to interact with a myriad of species. The American Humane Association Humane Conservation program is designed to assure future generations that the animals they care about are experiencing good welfare in their respective zoos and aquariums."

—*Linda Reeve Peddie, DVM*

"American Humane Association's Humane Conservation certification audit is the first professional assessment of its kind to evaluate the welfare of zoological species from the perspective of the animals. As such, this evidencebased, landmark program complements other well-established, highly regarded, and science-based professional accreditation programs by the leading trade associations representing zoological facilities and animal care and training professionals alike."

—*Grey Stafford, Ph.D., Incoming President of the International Marine Animal Trainers' Association, and author of the book on reward-based training: ZOOMility: Keeper Tales of Training with Positive Reinforcement*

"I am pleased to wholeheartedly endorse American Humane Association's Humane Conservation certification program for zoos and aquariums. Providing an objective third-party auditing program from an organization with the long history of the protection of animals as the American Humane Association has can only help position zoos and aquariums for the future."

—*Tom Otten, Principal, ReefExperience, LLC*

"Today, more than ever, it has become clearly evident that humanity must turn its knowledge and resources to a better and deeper understanding and care of our environment and the species that inhabit this unique and wonderful planet we call home. For decades zoos and aquariums and the people behind them have dedicated their lives to conservation, research and education, and together with governments and citizens from all parts of the world, these experts must lead the way towards sustainability in an ever-evolving and development-driven society. The Humane Certified program of American Humane Association is a breakthrough in the unbreakable and developing bond that has and will always exist between animals and human beings. The AMHMAR proudly supports these efforts and achievements by American Humane Association and all the professional and ethical people and institutions behind the program."

—*Rodrigo Constandse Córdova, President, AMHMAR / Mexican Association of Habitats for the Protection and Interaction with Marine Mammals*

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"Having had a career spanning 50+ years which included being a veterinarian who treated all species of animals, an educator for a nationally known program which focused on the humane care of all species of animals and caring for all species of animals used by the entertainment industry, I have observed a major shift in public opinion regarding animal welfare. Welfare standards for pets, livestock and other farm animals have kept pace with these societal changes, but one major group of animals has until now not been formally addressed. These are the animals kept for public display. With the introduction of the American Humane Association Humane Conservation program, a science-based platform for the systematic evaluation of an animal's welfare from the animal's perspective now exists. This program was developed utilizing an international pool of talent including animal scientists, zoo and aquarium professionals, veterinarians, behaviorists and ethicists. The results of their efforts can be applied to any facility housing non-domestic animal life. The sole intent of this cornerstone program is to improve the care of animal life and thereby assure the public that this facility and its staff has been evaluated by a third party and has been graded with respect to the welfare needs of its animal collection. I fully and completely support this American Humane Association's program and applaud this organization's courage and determination to develop and offer this flagship program."

—James F. Peddie, D.V.M. *Distinguished Faculty Chair, Exotic Animal Training and Management program, Moorpark College, retired*

American Humane Association is the most highly regarded and longest-running animal welfare organization in North America. Its leadership and oversight in protecting the health and welfare of animals is increasingly important to the conservation of species and natural ecosystems. There has never been a time when humans have needed to connect more deeply to animals, to care and to take steps to protect species at risk. Established with a stringent set of science-based standards, the Humane Conservation certification upholds those who bear its name to the highest level of animal welfare in the continent.

—John Nightingale, PhD, *President and CEO, Vancouver Aquarium Marine Science Centre*

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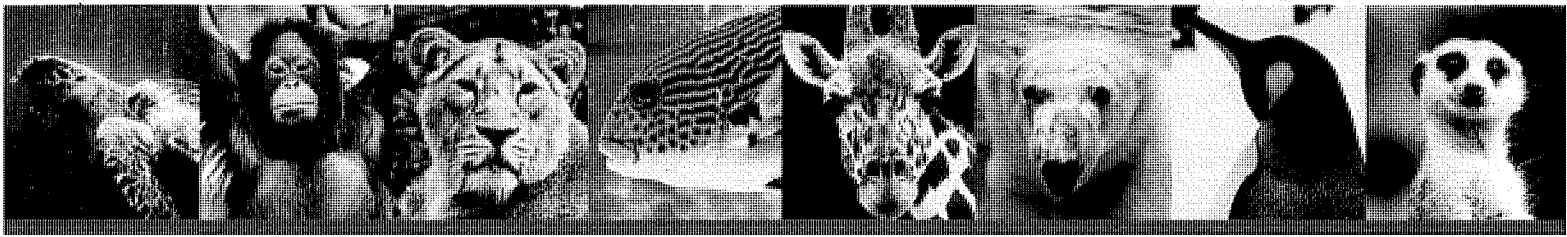
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**HUMANE
CERTIFIED**

A PROGRAM OF AMERICAN HUMANE ASSOCIATION

American Humane Association Humane Conservation™ program

Animal Welfare Certification for Zoos, Aquariums and Conservation Centers

American Humane Association is the country's first national humane organization and the world's largest certifier of the welfare and humane treatment of animals in working, entertainment and other environments. Founded in 1877, the historic American Humane Association has been at the forefront of virtually every major advance in the protection of animals from abuse and neglect, and today oversees the humane treatment of well over a billion animals.

As the world leader in certification of the humane treatment of animals, American Humane Association's animal welfare certification programs are built on the foundation of science- and evidence-based practices, with independent third-party leading experts, scientists, behaviorists and ethicists determining what practices are indeed humane. The commitment to science in determining the standards remains at the very core of existing certification programs, including the iconic No Animals Were Harmed® animal welfare certification in the American Humane Hollywood program and American Humane Certified™ farm animal certification in the American Humane Heartland program. Since 1940, American Humane Association has overseen the safety and humane treatment of animals in film and television production. Its No Animals Were Harmed certification program monitors some 100,000 animal actors on more than 1,000 sets each year with an extraordinarily high safety rate and, for more than 75 years, has been the gold standard for the proper use of animals in filmed media. The American Humane Certified™ farm animal welfare certification program is the nation's first, largest and fastest-growing independent third-party monitoring and audit program dedicated to the humane treatment of farm animals. Many of the world's largest producers, retailers, food services and major restaurant chains work with our program, including Unilever, Taco Bell, Peet's Coffee, Caribou Coffee, Einstein Bros. Bagels, and Butterball turkey.

New Endeavor: American Humane Association's Humane Conservation™ program

American Humane Association Humane Conservation certification program, launching in June 2016, is the newest effort by American Humane Association to build a better world for the Earth's creatures. As habitats disappear and environments change, leaving animals to face what scientists are calling a "Sixth Mass Extinction," with species disappearing at a rate eight to 100 times higher than expected, zoos, aquariums and conservation centers have become modern arks of hope for many creatures, playing a more vital role than ever before.

The Challenge

As the world's zoos, aquariums and conservation parks go about the invaluable work of preserving the extraordinary species with whom we share the world, increasing numbers of people are also rightly demanding that the welfare and treatment of these animals in human care be ensured and importantly verified. Only 2.3 percent of these institutions worldwide are currently accredited and although the Association of Zoos and Aquariums and others provide programs for such overall, covering facilities, management and the like, there has been no independent third-party certification effort solely devoted to the welfare of animals in their care – until now.

The Humane Solution

To fill this vital need, American Humane Association has developed the first-ever independent, scientific and evidence-based third-party humane certification standards focusing on the animals living in these institutions. Created and backed by the most well-respected, iconic names in science, animal welfare, and the conservation field, these new standards will help ensure the welfare and humane treatment of the animals in human care at the world's zoos, aquariums and conservation centers. Adding another level of rigor, the implementation of these comprehensive standards will be verified by independent auditors.

Humane Conservation Certification Audit

The Humane Conservation certification audit has two overarching components: the Pre-Audit Application and the On-Site Audit of a facility's animal collection.

Both the Pre-Audit and On-Site Audit are designed to apply to zoos, aquaria, nature centers, museums and private collections of any size.

1) Pre-Audit Application

The Pre-Audit Application is completed by an organization that is requesting consideration of an American Humane Association's on-site Humane Conservation certification audit. The Pre-Audit Application allows the organization to provide detailed information regarding the animal collection, husbandry and animal care teams, environmental quality processes, physical operations and more.

The Pre-Audit Application must be completed prior to any On-Site Audit of the animal collection of an organization.

2) On-Site Audit

The On-Site Audit is focused on assessing the welfare of individual animals and groups of animals housed together. Extensive examinations based on core principles set the stage for the assessment, followed by a set of detailed questions aimed at confirming that the animals are not only in good condition physically and socially, but have good welfare overall.

The focus of this program is on the welfare of the animals. To assess this as rigorously as possible, the audit consists of two elements:

1) **Direct observation of the individual animals**, in both the institution's public exhibits and behind the scenes, examining key welfare indicators, including, among other issues, such factors as:

- Good health
- Good housing
- Good feeding
- Good management
- Appropriate behaviors, including:
 - Ø The display of natural behaviors at the individual and group levels
 - Ø The lack of abnormal behaviors at the individual and group levels
 - Ø Social interactions between animals and the ability to self-separate
 - Ø Positive, healthy and humane interactions between animals and handlers
- Physiology/biological samples
- Activity levels
- Use of space
- Appetite/food motivation/body score
- Disease
- Mortality
- Meeting of federal and state regulations
- Thermoregulation
- Lighting/shading needs

2) **Indirect indicators** to include vital, in-depth background information on the animals, their health, habitat, environmental quality issues, staff knowledge and training, veterinary, operational procedures and other factors:

- Animal husbandry procedures
- Environmental enrichments/choices/multiple options for animals
- Safety measures
- Nutritional needs
- Food quality
- Food safety
- Air quality
- Water quality
- Appropriate sound levels for animal life
- Consideration of diurnal/seasonal patterns
- Medical records
- Appropriate veterinary/health plan

- Plan to recognize adverse medical trends
- Treatment protocols/management plan for emergency medical situations (injuries, escapes, etc.)
- Animal husbandry protocols
- Training of staff interacting with animals
- Use of positive reinforcement in any animal husbandry/training programs
- Transparency and openness of daily operations and animal care

The On-Site Audit is designed to be species-specific. The overarching summary provides a guiding process for all animals in a collection to be assessed during an audit.

Audit: Mandatory Pass Checklist

In addition to examining the key indicators of animal welfare, the program includes three essential, non-negotiable criteria that must be met in order to pass the audit. The essential criteria are scored higher than other questions, and underlie the entire audit process.

Failure to meet these non-negotiable requirements will result in failure of the audit.

1) No Animal Abuse

Willful acts or signs of abuse by any person at the facility (staff or visitor) are unacceptable. Observation of such acts will automatically result in failure of the audit.

If failure occurs, auditor will note observations on audit form.

Animal Abuse

☐ PASS

☐ FAIL

2) Appropriate Health Plan (i.e., care of sick, injured animals) and Implementation

The Pre-Audit application packet will identify whether an organization/facility has an appropriate veterinary/health plan (i.e., treatment and preventive medicine plan) in effect. If one does not exist, whether with an on-staff veterinarian or an on-call veterinarian (or similarly trained individuals), one should be developed and implemented prior to an On-Site Audit.

Health Plan

☐ PASS

☐ FAIL

Review of the plan and discussion with the staff that such a plan exists is required once an auditor is on-site. Failure to provide such documentation and confirmation of a health plan will result in failure of the audit.

No observations of unattended/untreated, obviously sick or injured individuals due to abuse or neglect are acceptable. Observation of such conditions will automatically result in failure of the audit. If failure occurs, auditor will note observations on the On-Site Audit form (Section II).

3) Staff Conduct that Promotes Animal Welfare

Staff should be aware of the facility's protocols and procedures as well as conduct themselves in a manner that promotes animal welfare. Failure to do so, or observations of blatant abuse (see #1 above) will result in failure of the audit.

Staff Conduct

☐ PASS

☐ FAIL

If failure occurs, auditor will note specific observations on the audit form.

Organizations certified as humane with good animal welfare in the American Humane Association Humane Conservation certification program are expected to maintain high welfare standards throughout the term of their certification. If it is determined after an audit that an organization in the Humane Conservation program has fallen out of compliance, that organization will be immediately suspended from the program. Suspended organizations must verify correction of the non-conformances and pass a new audit before being reinstated. ***American Humane Association reserves the right to perform spot checks at any time during the certification period.***

American Humane Association's Humane Conservation standards are written to cover facilities in varying geographic and temperature regions. These facilities can be zoos and/or aquaria or private collections for performance/display and may have terrestrial, aquatic, avian or a combination of these habitat types for the species in their care. Therefore, not all questions/sections in these standards apply to every facility. Each organization must also comply with any local, state or federal mandates for handling and maintenance of animals (non-endangered, endangered and threatened species included) that might affect the environment or safety of their animals.

All animal exhibits and all animal care staff areas must be accessible to the auditor(s) during an assessment visit. If there are quarantine areas, care must be taken to adhere to the established protocols and policy for such a space (e.g. if re-admittance to animal habitats/exhibits is not allowed, then scheduling for access should be considered).

Select list of papers involving cetaceans in human care with an impact on conservation

Title	Author(s)	Impact(s) on conservation	Involvement of cetaceans in human care
Energy requirements of Pacific White-sided dolphins (<i>Lagenorhynchus obliquidens</i>) as predicted by a bioenergetic model	Erin U. Rechsteiner, David A. S. Rosen, and Andrew W. Trites Marine Mammal Research Unit, Fisheries Centre, University of British Columbia.	Determining how much energy, and therefore how much food, is required by a Pacific White-sided dolphin. This information can allow policy makers to determine the amount of food required by PWSD in the Pacific Ocean, enabling us to ensure there is sufficient food by managing fishing and other pressures.	Metabolic rates (energy used) calculated from dolphins at Vancouver Aquarium
What can Captive Whales tell us About their Wild Counterparts? Identification, Usage, and Ontogeny of Contact Calls in Belugas (<i>Delphinapterus leucas</i>)	Valeria Vergara University of British Columbia, Robert Michaud Group for Research and Education on Marine Mammals, Lance Barrett-Lennard Cetacean Research Lab	Identified "contact calls" used by mother and calf belugas to locate one another and maintain group cohesion. Enables researchers to locate calving and rearing areas more easily and effectively. If key locations can be identified, policy makers will be able to make an informed decision on protecting them.	Belugas at the Vancouver Aquarium were observed and listened to in order to identify which sounds were "contact calls", and which were used for other reasons. In the Arctic or St Lawrence it is not possible to view and record animals with enough certainty to definitively associate particular sounds with particular behaviors.
Growth and maturity of belugas (<i>Delphinapterus leucas</i>) in Cumberland Sound, Canada, and in captivity: evidence for two growth layer groups (GLGs) per year in teeth	P. Brodie Balaena Dynamics Ltd. Halifax, K. Ramirez VP Animal Care and Training Shedd Aquarium, Chicago and M. Haulena Staff Veterinarian, Vancouver Aquarium, Vancouver.	Definitively determined a method for identifying the age of belugas. Identifying the age of individuals can give us more information on how a population is changing and how it may change in the future. It is also key information for producing computer models and assessing changes in the future.	Adult belugas in the ocean are of unknown age. In the past, the two methods of determining age in these animals gave wildly different results. The Vancouver Aquarium and other institutions have enabled a re-examination of information dating back to the 1950s and identified the most accurate measurement tool to determine the age of belugas. This was possible by the Vancouver Aquarium knowing the age of our belugas.

Resting Metabolic Rate of a Mature Male Beluga Whale (<i>Delphinapterus leucas</i>)	David A. S. Rosen and Andrew W. Trites Marine Mammal Research Unit, Fisheries Centre, University of British Columbia,	Determined the resting metabolic rate for a beluga. Resting metabolic rate is the most basic measure of energy consumption and enables researcher and policy makers to determine how much food an animal needs to consume in order to be healthy.	The beluga who participated lived at the Vancouver Aquarium and was trained for four months prior to participating. The training is essential as this type of testing is ineffective if the animals are not in a resting state. These tests have been done on animals in the ocean, but they are less reliable due to the inherent stress associated with chasing and capturing. Animals participating voluntarily provide the most accurate data.
Seasonal Resting Metabolic Rate and Food Intake of Captive Pacific White-Sided Dolphins (<i>Lagenorhynchus obliquidens</i>)	Erin U. Rechsteiner, David A. S. Rosen, and Andrew W. Trites Department of Zoology and Marine Mammal Research Unit, Fisheries Centre, The University of British Columbia	Establishing a baseline for tracking changes in metabolism and food intake throughout a 12-month period in PWSD, with the goal of determining the cause and effect relationships at play. As it is impossible to track the resting metabolism of individual dolphins in the ocean over this time (if at all), the use of dolphins at VA enabled researchers to explore the seasonal changes in dolphin's bodies.	VA dolphins formed the study group, as this study would not be possible to conduct on dolphins outside of a controlled, trained environment. Important to note that the researchers end by saying that more information and data points are needed from other dolphins in human care.
Masked hearing thresholds of a beluga whale (<i>Delphinapterus leucas</i>) in icebreaker noise	Christine Erbe Curtin University D.M. Farmer	Establishing the levels at which belugas can no longer make out typical vocalizations (i.e.: contact calls between mother and calf). Knowing a safe limit on volume can help policy makers involved in regulating the shipping industry establish safe speeds, distances, and other policies to protect beluga nursery areas.	The belugas at VA indicated when they could or could not hear using a "go/no-go" system, enabling researchers to specifically observe under what conditions the whales were no longer able to properly hear vocalizations. In the ocean it is not possible to isolate individual whale behavior in response to the environment in this manner.
Vocal Development in a Beluga Calf (<i>Delphinapterus leucas</i>)	Valeria Vergara ¹ and Lance G. Barrett-Lennard ² ¹ Department of Zoology, University of	Tracking development of vocal patterns in a young beluga. With killer whales in B.C., researchers have developed a library of sounds and can identify individual whale groups by sound as well as by sight.	Associating individual sounds with individual animals and behaviours in this way is not possible in the ocean due to the inherent difficulty in figuring out

	British Columbia, #6270 University Boulevard, Vancouver, BC, Canada, V6T 1Z4; E-mail: vergara@zoology.ubc.ca 2 Cetacean Research Lab	Figuring out how belugas learn their sounds is this first step to determining whether or not a similar system can exist for belugas. This can have direct rehabilitation impacts, as in the case of killer whale Springer who was reunited with her pod in large part due to the ability of VA and colleagues to identify which pod she was a member of.	which animal is making noise, especially when multiple calves and mothers are present. Being able to identify which sounds belong to which group of whales has helped us understand the populations of killer whales in B.C. and directly helped rehabilitation efforts.
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Papers addressing health and welfare of cetaceans in human care

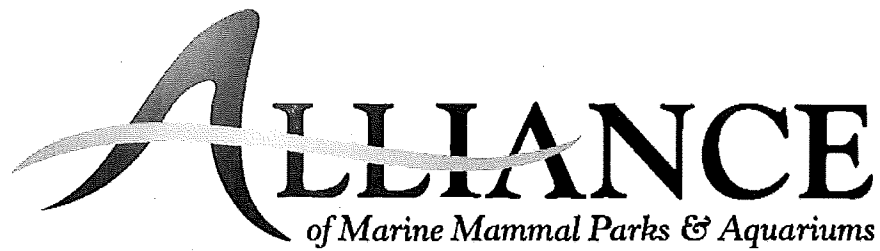
Title	Author(s)	Content	Impact on Vancouver Aquarium
Arks of Hope Ambassadors for Animals The Pivotal Position of Zoos and Aquariums and Next Steps in Ensuring the Welfare of Animals in Human Care	American Humane Association	Developed and laid out a framework for assessing animal welfare in zoos and aquariums. Includes direct observation of the individual animals and indirect indicators through both remote and in-person examinations. Declares that zoos and aquariums are "vessels themselves to safely house and help sustain populations of critically endangered animals".	Vancouver Aquarium was assessed to these standards and accredited by the American Humane Association as a "Humane Certified" facility.
Adaptive Changes in Hematologic and Plasma Chemical Constituents in Captive Beluga Whales, <i>Delphinapterus leucas</i>	D. I. St. Aubin and J. R. Ceraci Department of Pathology, Ontario Veterinary College	Researchers collected blood samples from 42 belugas. Stress hormone levels increased immediately after capture/restraint but returned to normal within approximately seven days of living in a temporary enclosure.	While the animals studied were not at the Vancouver Aquarium it does provide information about how belugas' stress levels can respond to human care.
A systematic review of cortisol levels in wild and captive Atlantic	Shelby Proie	A literature review of all published data on cortisol (stress hormone) levels in three species of cetacean. This includes a comparison of stress hormone levels between cetaceans in human care versus	This paper suggests that cetaceans in human care seem to experience similar stress levels to their counterparts in the ocean.

Bottlenose Dolphin (<i>Tursiops truncatus</i>), Killer Whale (<i>Orcinus orca</i>), and Beluga Whale (<i>Delphinapterus leucas</i>)		in the ocean. The author found no appreciable difference between the stress levels of cetaceans in the ocean versus in human care when the same sampling methods were used.	
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Papers addressing impact on visitors of directly experiencing cetaceans

Title	Author(s)	Content	Impact on Vancouver Aquarium
Charisma and conservation: charismatic megafauna's influence on safari and zoo tourists' pro-conservation behaviors	Jeffrey C. Skibins, Robert B. Powell, Jeffrey C. Hallo	Analyzed impacts on both attitudes and conservation actions taken by visitors to zoos and safari parks. Established that experiencing charismatic megafauna (such as cetaceans) had a measurable impact on peoples' attitudes and pro-conservation behaviours. Established that this impact was comparable between <i>in situ</i> and <i>ex situ</i> situations (i.e.: whether a zoo or park).	Viewing charismatic megafauna in an Aquarium produces comparable behavioural impacts to viewing them in a field setting. In the conclusion of the paper the authors suggest that increasing opportunities for individuals to experience charismatic megafauna would likely have positive conservation results.
Harris Poll (no official title found)	Harris Interactive®	American survey of 2113 adults (total) conducted in 2005 and 2012. Key findings include: <ul style="list-style-type: none"> • 94 percent believe the people who care for the animals at marine life parks, aquariums and zoos are committed to the welfare of the animals. • 89 percent agree that children learn more about marine mammals at an aquarium or zoo than in a school classroom • 88 percent agree that you can learn about animals at marine parks in a way 	Although this is an American survey it is likely that there are similar levels of support for these programs locally.

		<p>that can't be replicated by watching film or TV programs.</p> <ul style="list-style-type: none"> • 91 percent agree that seeing a marine mammal at these facilities fosters a connection to the animal. 	
Dolphin Shows and Interaction Programs: Benefits for Conservation Education?	L.J. Miller, V. Zeigler-Hill, J. Mellen, J. Koeppel, T. Greer, and S. Kuczaj	<p>Examined short term and long term impact on members of the public who had attended a dolphin program at one of six facilities.</p> <p>Reported increase in knowledge (short term) and retention of this knowledge over the long term. Reported increase in pro-conservation activities.</p> <p>Found that visitors who had attended more dolphin programs in the past were more likely to engage in pro-conservation activities.</p>	Provides definitive evidence that the approach used by the Vancouver Aquarium does have a direct impact on both the knowledge levels and actions taken by visitors.
Conservation Caring: Measuring the Influence of Zoo Visitors' Connection to Wildlife on Pro-Conservation Behaviors	Jeffrey C. Skibins and Robert B. Powell	Measured visitor attitudes and actions pre and post visit to a zoological facility.	Similar to the megafauna study cited first in this section, authors say that "Results support the role zoos can play in fostering a connection to wildlife and stimulating pro-conservation behaviors."



FOR IMMEDIATE RELEASE

July 16, 2012

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***Public Confirms Overwhelming Support for
Important Conservation Education Missions of
Marine Parks, Aquariums and Zoos***
**National Poll Finds Marine Parks, Aquariums and Zoos Best Places for
Children to Learn About, Connect with Marine Mammals**

CHICAGO - A new review of data from two separate national opinion polls demonstrates there is consistent and overwhelming public support for marine mammal facilities and their role in conservation education.

Ninety-seven percent of people agree that marine life parks, aquariums and zoos are important because they educate children about marine mammals – animals that children might not have the opportunity to see in the wild.

The Alliance of Marine Mammal Parks and Aquariums commissioned Harris Interactive® to conduct online polls released in 2005 and 2012 that evaluated public attitudes toward marine mammals in public display facilities. The overwhelmingly high percentage of support – 97 percent – remained consistent in both polls.

In addition, many continue to feel that people are more likely to be concerned about animals if they learn about them at marine life parks, aquariums and zoos. In both 2012 and 2005, 93 percent agreed with this statement.

“People feel that being able to connect with dolphins, killer whales, beluga whales and other marine mammals in facilities is important for education and conservation,” said Marilee Menard, executive director of the Alliance. “This is clear not only from the consistent support over time, as demonstrated by the two polls, but by the 45 million people who visit Alliance-accredited marine life parks, aquariums and zoos every year.”

-more-

Data from the 2012 poll shows that 94 percent of those polled agree that children are more likely to be concerned about animals if they learn about them at marine life parks, aquariums and zoos, and that visiting these facilities can inspire conservation action that can help marine mammals and their ocean environments.

The 2012 poll also found that 94 percent of people agree that zoological parks and aquariums offer valuable information about the importance of oceans, ocean environments and the animals that live there.

Additionally, the latest poll found that 89 percent agree that children learn more about marine mammals at an aquarium or zoo than in a school classroom, and 88 percent agree that you can learn about animals at marine parks in a way that can't be replicated by watching film or TV programs. Some 91 percent agree that seeing a marine mammal at these facilities fosters a connection to the animal.

"When children – and adults – see and experience the excitement of being close to marine mammals such as whales, dolphins, and sea lions, it resonates in ways that even the most vividly illustrated book or video cannot. It is an emotionally enriching experience that fosters a sense of caring for these animals and their ocean environments," said Menard, whose Alliance membership represents 55 accredited facilities that account for the greatest body of experience and knowledge about marine mammal care and husbandry in the world.

Other findings from the latest public attitude survey include:

- 94 percent believe the people who care for the animals at marine life parks, aquariums and zoos are committed to the welfare of the animals.
- 97 percent (ages 18-24) would be interested in swimming with dolphins.
- 93 percent believe that many of the successes to save endangered or declining species are at least in part a result of work done in marine life parks, aquariums and zoos.
- 90 percent agree that species in the wild benefit when their biology and physiology is studied in marine life parks, aquariums and zoos.
- 40 percent of Americans (about 125 million people) have visited a marine park, aquarium or zoo in the last 12 months, including 56 percent of households with children (about 20 million households).
- 90 percent believe that interacting with dolphins in a marine life park, aquarium or zoo offers people a deeper understanding and appreciation of this mammal.

-more-

“We pride ourselves on providing an educational and enjoyable experience for families,” Menard said. “Professionals at Alliance member institutions work every day to inspire guests of all ages to share their commitment to marine mammals, the need to protect them in the wild and to conserve ocean habitats.”

Methodology

Harris Interactive® conducted the studies online within the United States on behalf of the Alliance of Marine Mammal Parks and Aquariums among adults age 18 and older. The 2004 study was conducted between Sept. 15-21, 2004 among 1,102 qualified respondents, and the 2011 study was conducted between August 29 and September 6, 2011 among 1,011 qualified respondents. The data were weighted where necessary to be representative of the total U.S. adult population on the basis of age, sex, race/ethnicity, education, region and household income. The propensity score weighting was also used to adjust for respondents’ propensity to be online.

The Alliance of Marine Mammal Parks and Aquariums is an international association of marine life parks, aquariums, zoos, research facilities, and professional organizations dedicated to the highest standards of care for marine mammals and to their conservation in the wild through public education, scientific study, and wildlife presentations.

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*** EDITOR’S NOTE: View a summary of the latest Harris poll at http://www.ammpa.org/_docs/120209HarrisReportData.pdf



An international organization dedicated to conservation through public display, education, and research

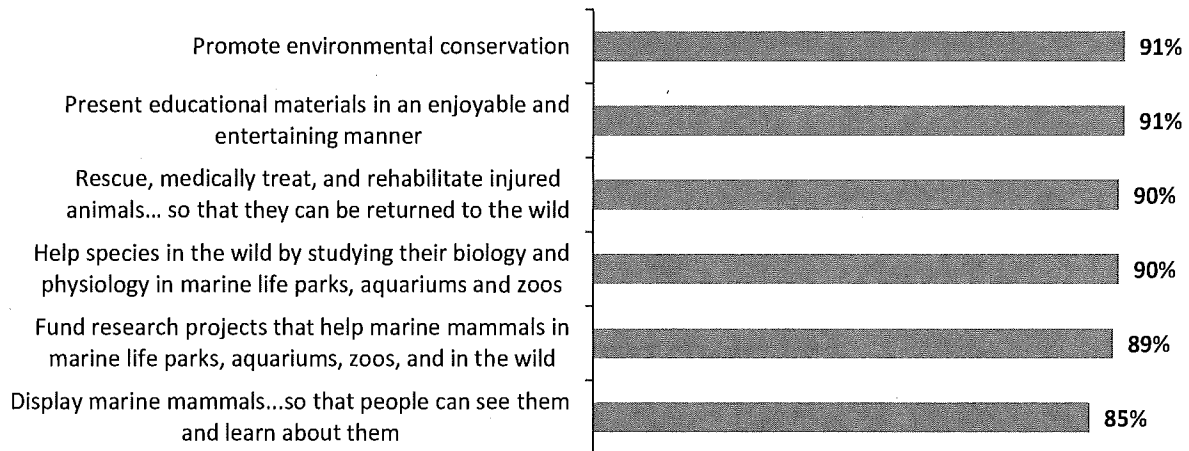
HARRIS INTERACTIVE®
MARINE MAMMAL POLL

February 2012

Key Findings – Role of Marine Life Parks, Aquariums, and Zoos

Large majorities of Americans feel believe that it is essential/somewhat important for marine life parks, aquariums and zoos to do the following:

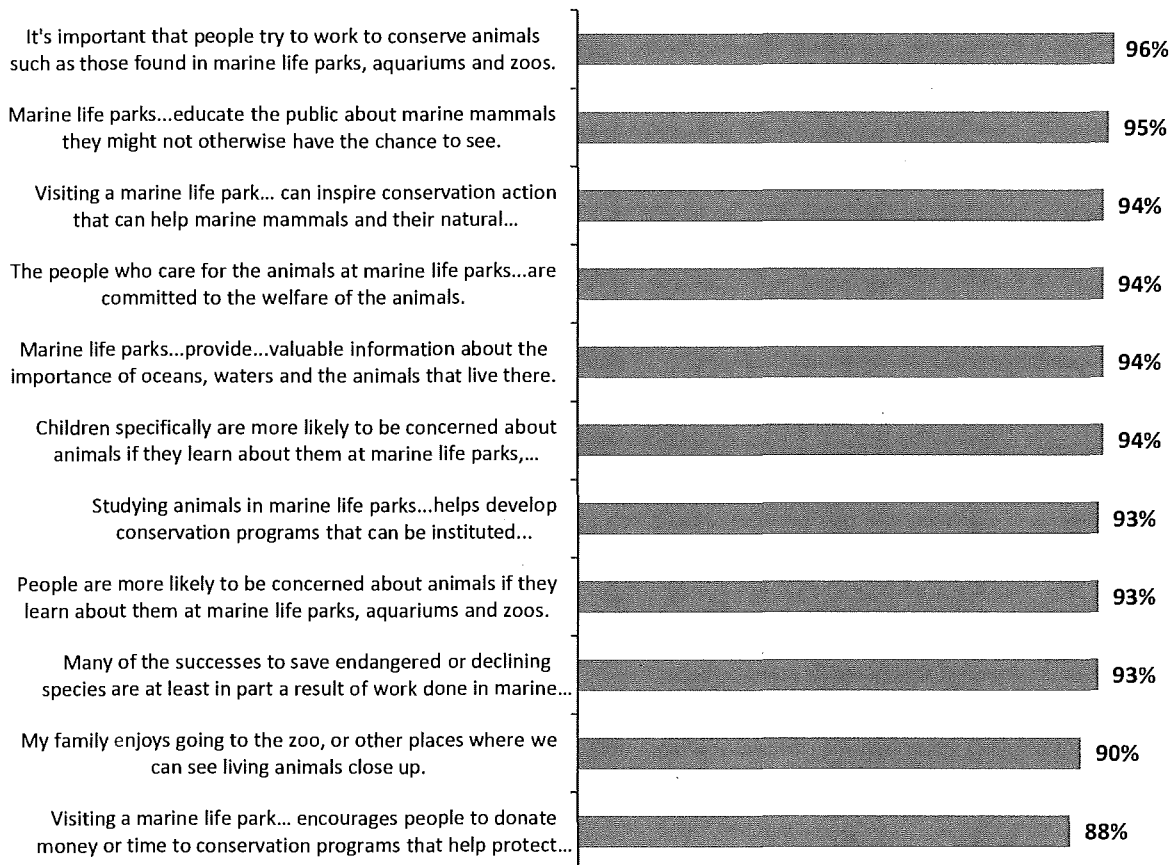
Role of Marine Life Parks, Aquariums and Zoos - Essential/Somewhat Important



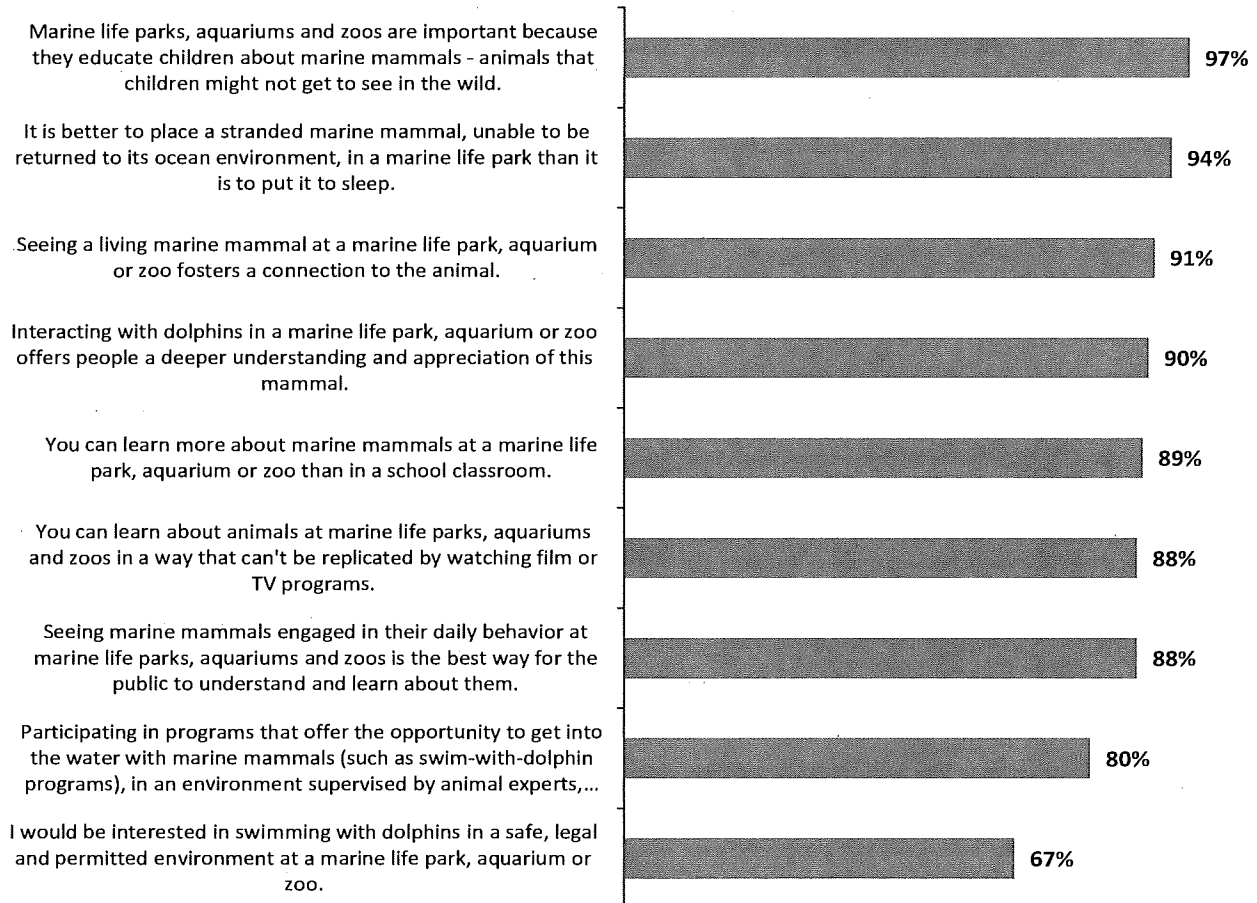
Key Findings – Attribute Statements about Marine Life Parks, Aquariums, and Zoos

Vast majorities of Americans agree with the following statements about marine life parks, aquariums, and zoos that maintain marine mammals:

Attribute Statements - Strongly/Somewhat Agree



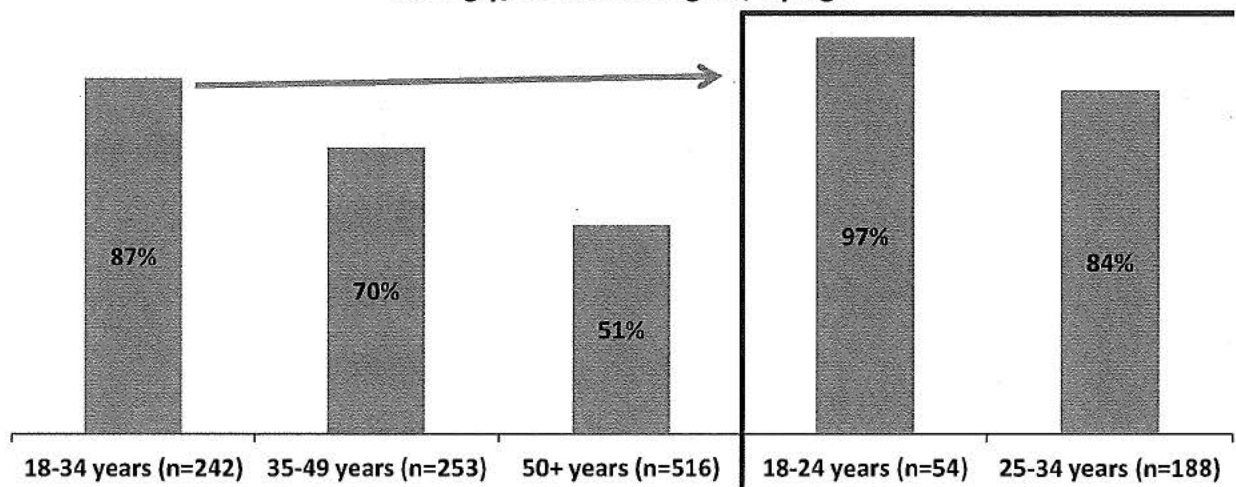
Attribute Statements - Strongly/Somewhat Agree



- 97%* of young adults 18-24 year olds would be interested in swimming with dolphins.
- 87% of Americans age 18-34 would be interested in swimming with dolphins, while 70% of those age 35-49 and 51% of those age 50+ would.
- 94% of 18-34 year olds agree that these programs are an effective way to learn about animals, while 80% of 35-49 year olds and 70% of those age 50+ do.
 - 90%* of 18-24 year olds and 95%* of 25-34 year olds feel this way.
- 87% of Americans with children in the household agree that these programs are an effective way to learn about animals.

- 78% of Americans with children in the household would be interested in swimming with dolphins.
- Participating in programs that offer the opportunity to get into the water with marine mammals (such as swim-with-dolphin programs), in an environment supervised by animal experts, is an effective way to learn about animals. (80%)

"I would be interested in swimming with dolphins in a safe, legal and permitted environment at a marine life park, aquarium or zoo." - Strongly/Somewhat Agree, By Age



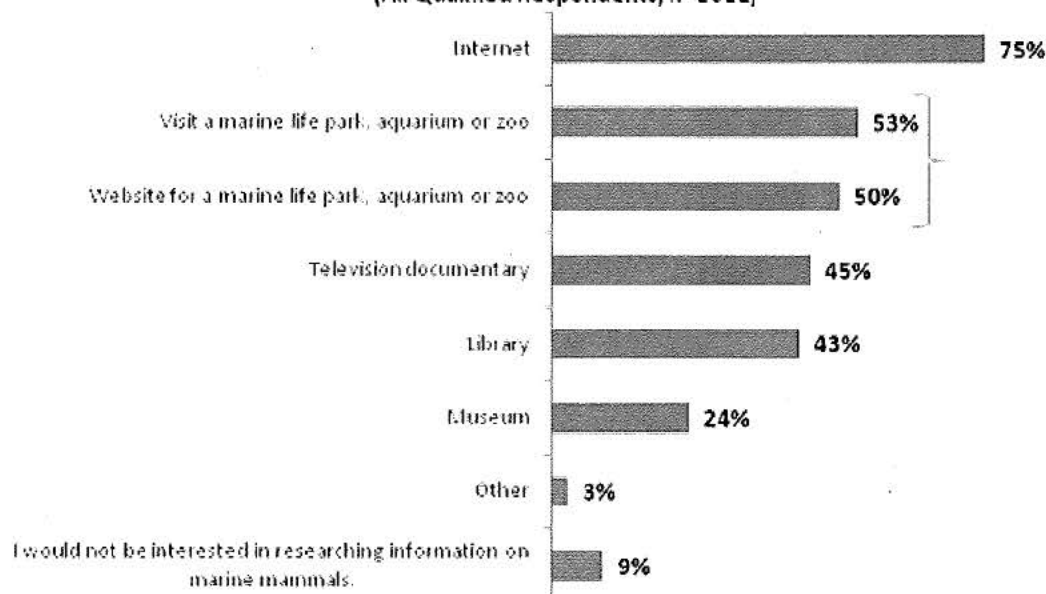
Key Findings – Educational Resources

The Internet (75%) is the top choice by Americans when looking for an educational resource to learn about marine mammals. This is followed by visiting a marine life park, aquarium or zoo (53%), a website for a marine life park, aquarium or zoo (50%), television documentary (45%), library (43%), museum (24%), or other (3%). A combined 65% of adults would seek information from a marine life park, aquarium or zoo, either by visiting one in person or by accessing a website for the organization.

- Fifty-nine percent of females and 45% of males would visit a marine life park, aquarium or zoo to learn about marine mammals.
- Sixty-one percent of those who consider themselves extremely/very concerned about marine mammals would visit a marine life park, aquarium or zoo to learn about marine mammals.

Preferred Educational Resources About Marine Mammals

(All Qualified Respondents, n=1011)



Key Findings – Visitation to a Marine Life Park, Aquarium, or Zoo in the Past 12 Months

Two fifths (40%) of Americans have visited a marine life park, aquarium or zoo in the past 12 months.

- Larger percentages of Americans age 18-34 (56%) have done so than those age 35-49 (44%) or age 50+ (26%).
 - Forty-three percent* of 18-24 year olds and 62%* of 25-34 year olds have visited in the past year.
- Households with children (56%) are more likely to have visited than those without children (33%).

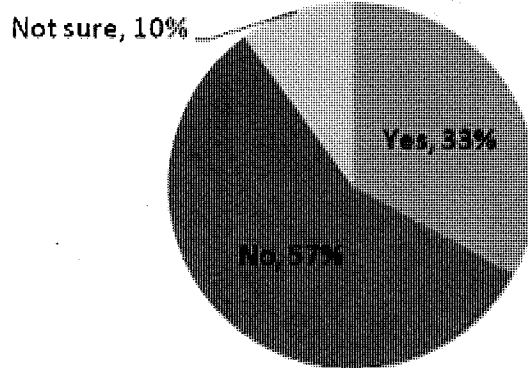
Key Findings – Charitable Contributions

Thirty-three percent of Americans who are not part of a zoo organization have ever contributed money to a marine life park, aquarium or zoo.

- Forty-eight percent of those who had visited a marine park, aquarium or zoo in the past year but are not part of a zoo organization have ever contributed money.
- Among those who consider themselves extremely/very concerned about animals, 40% have contributed to these types of organizations. Similarly, 39% of those extremely/very concerned about marine mammals have contributed.

Ever Contributed Money to a Marine Life Park, Aquarium or Zoo

(Not Part of Zoo Organization/Not Sure, n=943)

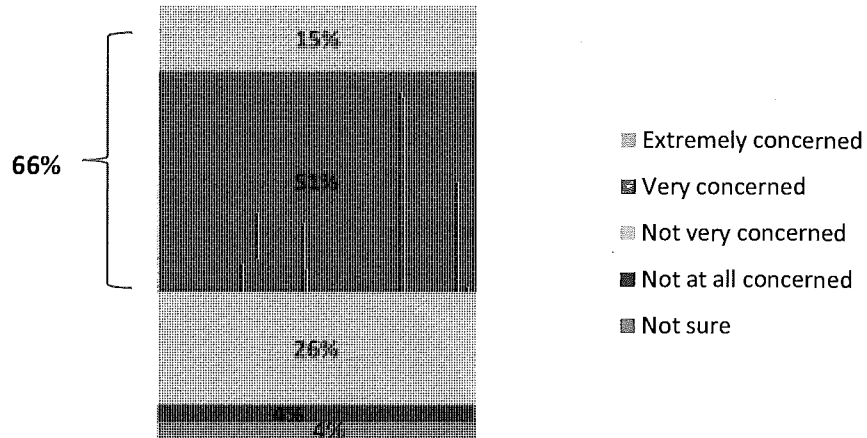


Key Findings – Concern for the Protection of Animals and Wildlife

66 percent of Americans consider themselves extremely/very concerned about the protection of animals and wildlife.

- Although majorities of males and females describe themselves as extremely/very concerned, females (72%) are more likely than males (59%) to feel this way.
- While a majority of younger Americans age 18-34 (56%) consider themselves extremely/very concerned, their older counterparts age 35-49 (72%) and 50+ (70%) are more likely to feel this way.
 - Forty-six percent* of Americans age 18-24 and 60%* age 25-34 are extremely/very concerned about the protection of animals and wildlife.

Concern for the Protection of Wildlife

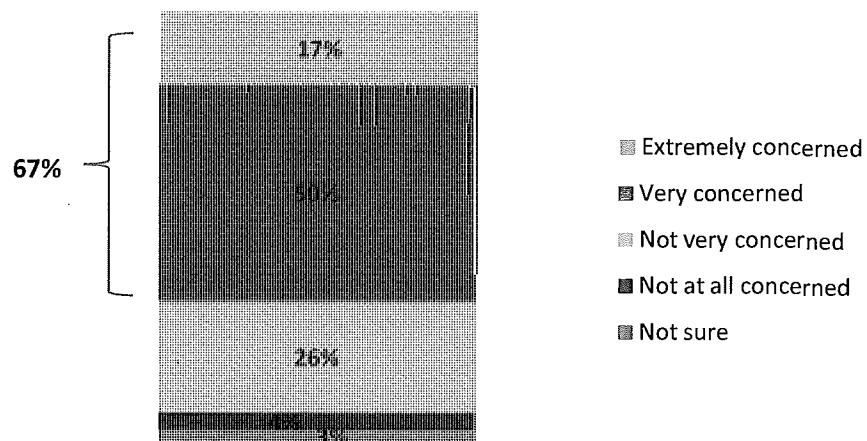


Key Findings – Concern for the Protection of Marine Mammals

In line with the protection of animals and wildlife, about two-thirds (67%) of Americans consider themselves extremely/very concerned about the protection of marine mammals.

- While majorities of males and females describe themselves as extremely/very concerned, females (73%) are more likely than males (60%) to feel this way.
- Although a majority of younger Americans age 18-34 (56%) consider themselves extremely/very concerned, their older counterparts age 35-49 (73%) and 50+ (70%) are more likely to feel this way.
 - Forty-two percent* of Americans age 18-24 and 62%* age 25-34 are extremely/very concerned about the protection of marine mammals.

Concern for the Protection of Marine Mammals



Methodology

- Conducted by Harris Interactive on behalf of Alliance of Marine Mammal Parks and Aquariums
- Field period: August 29 – September 6, 2011
- Online 15 minute nationally representative quantitative survey
- Respondents recruited from Harris Interactive proprietary panel
 - Sample Size: 1,011
 - Age 18+
 - U.S. Residents
 - Figures for age, sex, race/ethnicity, education, region, and household income were weighted where necessary to bring them into line with their actual proportions in the population. Propensity score weighting was also used to adjust for respondents' propensity to be online.

**Note: Findings derived from small base sizes (less than 100 respondents) are marked with an asterisk.*

Charisma and conservation: charismatic megafauna's influence on safari and zoo tourists' pro-conservation behaviors

Jeffrey C. Skibins · Robert B. Powell · Jeffrey C. Hallo

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Abstract Annually, millions of tourists go on safari and visit zoos primarily to view large charismatic wildlife. These venues rely on the inherent appeal of these animals to increase visitation and anchor conservation efforts. In conservation campaigns, flagship species are used to stimulate a connection to a species and promote pro-conservation behaviors. However, empirical support for behavioral outcomes associated with flagships is lacking. Nor is it known how a connection to a species influences behaviors. This study explored (a) how tourists connect to wildlife, how this relationship is influenced by the on-site experience, and how these factors interact to influence behavior, and (b) how the experiences between safari and zoo venues differed. A model was developed using interactional theory and analyzed with structural equation modeling. Data were obtained from 416 tourists to Tanzanian parks and protected areas and 452 tourists to two U.S. zoos and one aquarium. An existing connection to wildlife and experiential factors directly influenced tourists' connection to a species, but not behaviors. Tourists' connection to a species had a significant positive influence on pro-conservation behaviors for individual species and general biodiversity. The influence of the experience was equivalent across safari and zoo venues. Results support the ability of safari and zoo wildlife tourism to produce conservation outcomes.

Keywords Charismatic megafauna · Connection to wildlife · Flagship species · Pro-conservation behaviors · Structural equation modeling · Wildlife tourism

Introduction

Does viewing wildlife, in wild or captive settings, stimulate tourists to care about species and actively support their conservation? Advocates for wildlife tourism suggest that

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viewing charismatic species can increase tourists' awareness and participation in pro-conservation behaviors, such as philanthropy, which support the sustainability of tourism activities. Additionally, these benefits are purported to outweigh the costs of potential disturbances to wild populations and the use of captive populations in zoos. However, few studies have investigated how the wildlife viewing experience is linked to enhancing visitors' connection to wildlife and pro-conservation behaviors such as philanthropy, volunteering, and activism.

Wildlife tourism is defined as tourism activities that provide encounters with non-domesticated animals in wild (in situ) or captive (ex situ) settings (Higginbottom 2004a). Most education and conservation initiatives associated with wildlife tourism are designed to enhance visitors' attitudes and behaviors associated with species of interest. Research suggests that encounters with wildlife can facilitate a connection to nature (Clayton and Myers 2009). To that end, in situ and ex situ wildlife tourism venues have relied on charismatic megafauna (CMF) to anchor visitor supported conservation initiatives.

CMF are usually large vertebrates such as bears, great apes, big cats, and elephants. Such species are the cornerstone of the wildlife tourism industry and a rallying point for conservationists. CMF based wildlife tourism has been shown to be financially viable, highly popular, and capable of raising awareness of threats to the species of concern (Kerley et al. 2003; Lemelin et al. 2008; Lindsey et al. 2007; Lukas and Ross 2005; Matt and Aumiller 2002; Stoinski et al. 2008). Tourists have been shown to develop a strong connection to individual animals observed in wild and captive settings, and this connection has been shown to extend to the species as a whole (Curtin 2006; Schanzel and McIntosh 2000). Wildlife tourism sites that have CMF enjoy the added benefits of greater financial revenues; higher public profiles; and more volunteers than sites without CMF (Green and Higginbottom 2000; Higginbottom 2004a, b Higginbottom, et al. 2003; Preston and Fuggle 1987).

Studies have linked visitor responses such as: satisfaction (Obua and Harding 1996; Skibins et al. 2012a); understanding (Lukas and Ross 2005); concern (Bruni et al. 2008); and awareness (Peake et al. 2009) to in situ and ex situ CMF viewing experiences. Additionally, wildlife viewing experiences as a whole can increase a connection to nature (Beaumont 2001; Lindsey et al. 2007). For example, Cousins et al. (2009) reported that after observing in situ lion behavior, volunteers express a deep sense of wonder, awe and a connection with nature. Curtin (2006) found that following dolphin encounters, tourists related peak experiences and a state of euphoria. However, few studies have investigated the relationship between the CMF viewing experience and visitors' willingness to engage in pro-conservation behaviors (Schultz and Tabanico 2007). Furthermore, the links between attraction, awareness, and action purported by conservationists, have been challenged (Waylen et al. 2009).

This study explored the relationship between existing connections to wildlife, experience characteristics, caring, and pro-conservation behavioral intentions (hereafter pro-conservation behaviors) using interactional theory (Fig. 1) and structural equation modeling (Fig. 2) by examining in situ (Tanzanian parks and protected areas) and ex situ (U.S. zoos and aquariums, hereafter zoos) experiences. Interactional theory proposes that behavior is influenced by an interaction between the individual, and the social and physical environments (Altman and Rogoff 1987; Archer and Wearing 2003; Chan and Baum 2007; Ham 2010), and is particularly useful when the nature of proposed relationships is primarily exploratory. Additionally, interactional theory is more suited for studying suites of behaviors versus single behaviors (e.g. not littering). This study also investigated the differences between the in situ and ex situ experiences on conservation outcomes.

Additionally, the pathways between experience characteristics, caring, and behaviors were analyzed to understand how different CMF might serve as flagship species.

Wildlife tourism

Generalized concepts of sustainable nature-based tourism are recognized in the literature as early as 1965 and reference dimensions presented in the Brundtland Report (Blamey 2001). In an early article proposing a “symbiotic relationship” between tourism and conservation, Budowski (1976) states, “Tourism helps by lending support to those conservation programmes which will develop educational, scientific, and recreational resources, with the objective that they in turn will attract more, and different kinds of, tourists” (p. 29). There are examples of successful sustainable tourism for a variety of species, including lion tamarins (Dietz et al. 1994), bats (Pennisi et al. 2004), sea turtles and whales (Wilson and Tisdell 2003), and giant tortoises (Powell and Ham 2008).

Wildlife tourism, a distinct category of nature-based tourism, does not by definition need to meet sustainability metrics. In fact, the popularity of wildlife viewing can produce negative impacts due to poorly managed visitation (Sims-Castley et al. 2005). Examples of tourist induced negative impacts include: disease transmission to mountain gorillas (*Gorilla beringei beringei*) (Sandbrook and Semple 2006); increased habituation in brown bears (*Ursus arctos*) (Herrero et al. 2005); and food provisioning for wildlife in general (Orams 2002).

Poorly managed visitation may also compromise the effectiveness of on-site wildlife management plans. For example, to enhance viewing options, management strategies have been skewed to favor CMF populations at the expense of other species (Higginbottom 2004b; Lindsey et al. 2007). This may diminish visitors’ interest in other species within the park or zoo. CMF are also often the most difficult and expensive species to manage (Lindsey et al. 2007), and the rush to capitalize on their presence may cause areas in greater need of conservation, or lacking CMF, to be overlooked, and financial resources to be diverted from underfinanced protected areas (Wilkie and Carpenter 1999).

The rapid and continued growth of the wildlife tourism industry has brought tourists and tour operators to the table as de facto stakeholders in the management of parks and protected areas (Goodwin and Leader-Williams 2000). Managers must balance the

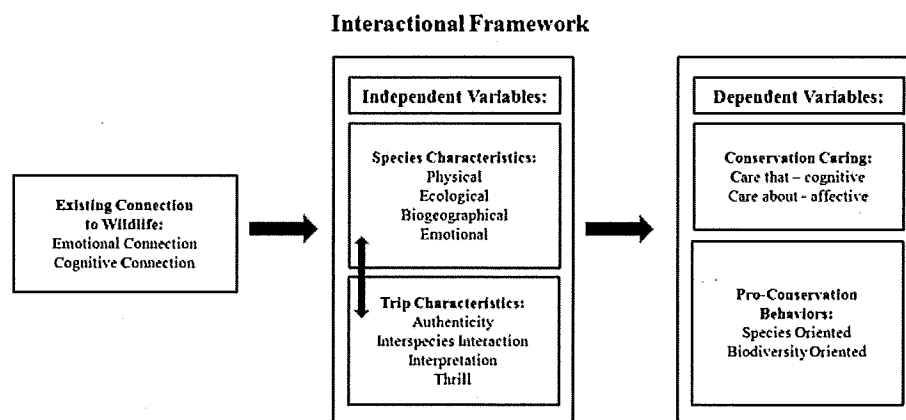


Fig. 1 Interactional framework of CMF viewing experience; adapted from Powell et al. (2009)

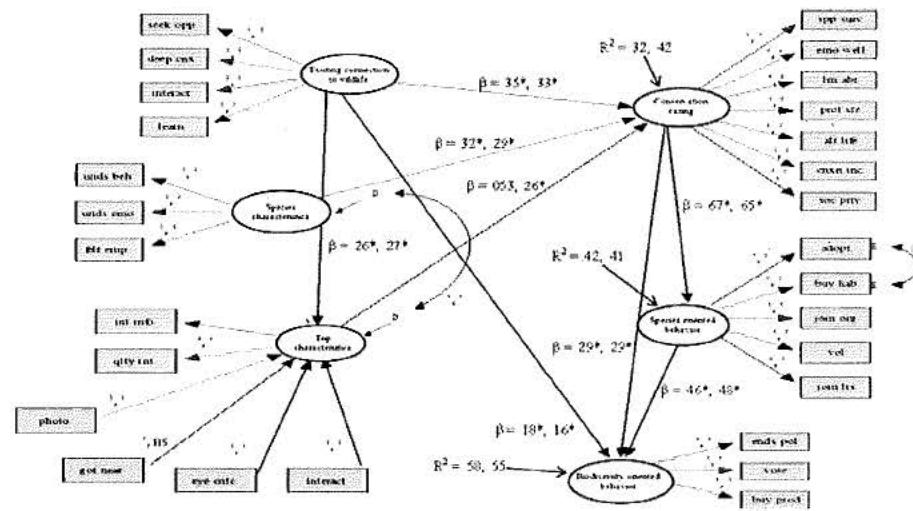


Fig. 2 Final structural model predicting pro-conservation behavioral intent. *Notes* Values reported for safari, zoo, respectively; all measurements robust; * $p < .05$; β = standardized parameter estimates; R^2 = explained variance. CFI .90, NNFI .89, SRMR .11, RMSEA .068, $SB\chi^2$ (df) 1869.94 (702), $p < .05$

demands of visitor viewing preferences against impacts to the resource (Semeniuk et al. 2009; Wright 1998). Overly restricting tourists can diminish viewing opportunities, which could decrease funding and public support for conservation associated with CMF. Additionally, zoos that focus too heavily on CMF may do so at the expense of committing resources to in situ support. Managers also face the challenge of how to extend the wonder and respect for CMF to “biophilically challenged” taxa, such as snakes (Myers et al. 2004), and biodiversity as a whole (Czech et al. 1998; Kerley et al. 2003).

Despite these challenges, CMF have been cited as a primary factor for conservation successes in wildlife tourism (Kruger 2005). They can also positively enhance attitudes and awareness, which Waylen et al. (2009) point out is not a benefit derived from many other conservation programs. However, the role of the viewing experience in fostering pro-conservation behaviors has received little attention in the literature.

Charismatic megafauna

A consistent trend among wildlife tourists is the desire to see large, potentially deadly vertebrates in wild (Goodwin and Leader-Williams 2000; Matt and Aumiller 2002; Okello et al. 2008) and captive settings (Balmford et al. 1995; Christie 2007; Ryder 1995). Studies have shown which characteristics make species more appealing to humans (Curtin 2005; Woods 2000); contribute to viewers’ emotional affinity for species (Ballantyne et al. 2010); and contribute to the overall emotional appeal of species (Myers et al. 2004). Other research suggests charisma can be applied broadly (Lorimer 2007) and can be found in species as divergent as the flightless dung beetle (*Circellium bacchus*) (Kerley et al. 2003) and kapok tree (*Ceiba pentandra*) (Bowen-Jones and Entwistle 2002).

So, while there is research that investigates charismatic characteristics, little work links those characteristics to visitors’ caring and willingness to support pro-conservation behavior. Furthermore, the differences between in situ and ex situ CMF viewing, and their influence on conservation outcomes are poorly understood (Ballantyne et al. 2007).

A species' ability to stimulate pro-conservation awareness and behavior is the basis of the flagship species concept. Any species that raises awareness of conservation issues and stimulates pro-conservation behavior, via a purposeful campaign, may qualify as a flagship species (Simberloff 1998). Ballantyne et al. (2007) found that observing species' natural behavior has the potential to increase visitors' understanding and foster a positive attitude toward conservation. Direct and indirect exposure to species used as flagships has also been shown to influence affective responses in viewers (Smith and Sutton 2008; Waylen et al. 2009; Wright 1998; Zinn et al. 2008).

CMF-based wildlife tourism provides fertile ground to investigate the flagship species concept. Myers et al. (2004) found that zoo visitors who observed gorillas and okapis (*Okapia johnstoni*) expressed increased levels of care and a strong desire to see them preserved in the wild. Ballantyne et al. (2010) found visitors expressed an emotional affinity for dolphins in captive and wild settings, and this affinity could transcend to biodiversity as a whole. These findings support the notion that any CMF could be stimuli for pro-conservation behaviors, and thus be considered for flagship status.

One reason for the success of CMF-based tourism is tourists' formation of a connection to nature that is derived from encounters with wildlife (Saunders 2003). Bentrupperbäumer (2005) recommends investigating species' attributes as one way of unraveling visitor preferences and conservation benefits. However, it is unknown if or what elements of a wildlife tourism experience may foster adoption of behaviors (Ballantyne et al. 2011).

Interactional theory

Interactional theory is a holistic framework intended to capture the complexity of phenomena by simultaneously considering psychological processes, environmental settings, and contextual factors (Archer and Wearing 2003; Altman and Rogoff 1987). This framework has been used to investigate the role of environmental and visitor characteristics, and education on behavior outcomes (Patterson et al. 1998; Powell et al. 2009; Werner et al. 2002).

Other behavior theories, such as the Theory of Planned Behavior (TPB) (Ajzen 1991) and Value-Belief-Norm (VBN) Theory (Stern 2000), have recognized that people rarely exist in behavioral vacuums and that the context of the behavior matters. Therefore, it is recommended that models incorporate experience characteristics in order to clarify relationships and increase the accuracy of predicting behavioral modification (Stern 2000; Stern et al. 1999). However, TPB and VBN are not designed to account for the role of the experience. Schultz (2000) implies interactional frameworks are the preferred method to investigate a connection to nature.

Using interaction theory as a guiding framework, this study investigated the influence of the CMF viewing experience on tourists' connection to a species (operationalized as Conservation Caring, see Methods) and pro-conservation behavior. Figure 1 represents how interaction theory was used to conceptualize the relationship between variables. This model is adapted from Powell et al. (2009) who found an interactional framework was successful for modeling the influence of nature-based tourism characteristics on behavioral intentions.

In this study, the interaction between the individual and contextual factors is modeled by the interaction between Existing Connection to Wildlife, and Species and Trip Characteristics. These in turn are hypothesized to have a direct positive influence on Conservation Caring and pro-conservation behaviors. More specifically, Conservation Caring is hypothesized as an intermediate dependent variable to behaviors.

Study sites

The goals of this study were based on tourists forming a connection with an animal during the experience. Tourists were allowed to self-describe the animal they connected with rather than select from a predefined list. Therefore, study sites were selected on the basis of their diversity of wildlife and the presence of several recognized CMF. All zoo sites are accredited members of the Association of Zoos and Aquariums.

In situ sites

The northern circuit of Tanzania was chosen for the consistent diversity and density of wildlife found at each park and protected area. Furthermore, most tourists use guides and thus have the potential for a basic exposure to interpretation. The northern circuit consists of the following national parks: Mt. Kilimanjaro, Arusha, Serengeti, Lake Manyara, Mkomazi, and Tarangire. Additionally, the Ngorongoro Crater is considered part of the northern circuit, although it is not a Tanzanian National Park.

Arguably, the most popular of these sites are Serengeti National Park (SNP) and the Ngorongoro Crater. Established as a game reserve in 1929 and a national park in 1951, SNP is the oldest and second largest (5700 mi²/14,763 km²) national park in Tanzania. It is home to over one million wildebeest, 300,000 Thomson's gazelle, 200,000 zebra and 32 other plains species. All 'Big 5' species (elephant, rhino, water buffalo, lion, and leopard) are present, as well as other CMF such as hippo, giraffe, and cheetah. Additionally, there are several mesofauna present such as hyenas, jackals, aardwolf, and servals, and 500 bird species. SNP is also the site of one of the great biological phenomena, the wildebeest migration. Due to these and other features, SNP has been designated a world heritage site biosphere reserve (Tanzania National Parks, n.d.; Tanzania Tourist Board, n.d.).

The Ngorongoro Crater is located in the Ngorongoro Conservation Area (NCA) and is administered by the Ngorongoro Conservation Area Authority. NCA is adjacent to SNP. Established in 1959, the NCA is 3200 mi² (8292 km²) and is a designated multiple use area. NCA is a Man and Biosphere Reserve and World Heritage Site. The Ngorongoro Crater is a large (100 mi²/260 km²) unbroken caldera. All visitors to the crater floor must be accompanied by a guide. The crater itself is home to 7,000 wildebeests, 4,000 zebra, 3,000 eland, and 3,000 Grant's and Thomson's gazelles. All 'Big 5' species are also present, as well as wild dogs, and 500 bird species including greater and lesser flamingo (Ngorongoro Crater, n.d.).

Ex situ sites

Brookfield Zoo, located in Brookfield, Illinois—a suburb of Chicago—receives more than 2,000,000 visitors annually. Founded in 1934, the 216-acre zoo is home to 450 different species and eleven multi-species habitat recreation exhibits. It has taken a leadership role in advancing the field of conservation psychology and is home to the Conservation Leadership Center and Center for the Science of Animal Welfare. The zoo is involved in 35 *in situ* conservation projects and houses 44 species that are part of a species survival plan (Chicago Zoological Society, n.d.).

The Shedd Aquarium is located on the shore of Lake Michigan in Chicago, Illinois. When the facility opened in 1930 it was the world's largest aquarium, and today it receives more than 2,000,000 visitors annually. The aquarium has expanded since its opening and now has four multi-species habitat recreation exhibits, and 32,500 animals representing 1500 species. Some of the more notable animals include whales, dolphins, otters, sharks,

and rays. The Shedd is involved in eight large-scale local and global in situ conservation projects (Shedd Aquarium, n.d.).

Zoo Atlanta was founded in 1889 and has become a nationally recognized leader in zoo-based conservation. The 40 acre site receives 700,000 annual visitors and is home to 900 animals, one of which is the giant panda. The zoo has the nation's largest gorilla and orangutan collection and three multi-species habitat recreation exhibits. The zoo also has several state-of-the-art interpretive exhibits linking in situ conservation to on-site exhibits. Additionally, Zoo Atlanta participates in 30 species survival plans and seventeen in situ projects around the world (Zoo Atlanta, n.d.).

Methods

Survey instrument development

Factors were developed and modified following DeVellis (2003). A pilot test ($N = 178$, 75 % response rate) was conducted at Brookfield Zoo, in July 2011, to identify construct validity and item clarity issues. The final survey instrument contained six factors, and 56 items (Table 1). All construct items were measured using 9 point Likert type scales; 1 = strongly disagree, 9 = strongly agree; 1 = extremely unlikely, 9 = extremely likely.

Existing connection to wildlife

This factor was adapted from Nature Relatedness (NR) (Nisbet et al. 2009) and Emotional Affinity to Nature (EAN) scales (Kals et al. 1999). These scales were selected based on their ability to distinguish the emotional and cognitive components of an individual's connection to CMF. The NR scale has been shown to measure the link between an individual's connection to nature and environmentally responsible behavior. In this study, items were designed to represent the 'self', 'perspective', and 'experience' sub-dimensions of NR. The EAN scale has been used to examine the relationship between an individual's emotional affinity toward nature and nature-protective behavior. Items in this study were designed to represent the cognitive and affective interest in nature, and emotional indignation over insufficient protection of nature sub-dimensions.

Species characteristics

Species Characteristics items encompass physical, ecological, biogeographical, and emotional attributes, which have been recognized to influence charisma (Bowen-Jones and Entwistle 2002; Clucas et al. 2008; Jacobs 2009; Kellert et al. 1996; Lorimer 2007; Rolston 1987; Sitas et al. 2009; Woods 2000). Physical attributes included general morphological features. Ecological attributes dealt with how the species behaved in its habitat. Biogeographical attributes consisted of symbolic roles of wildlife. Emotional attributes addressed the tourists' ability to understand and identify with emotional states of the animal.

Trip characteristics

Trip characteristics items were selected from experiential elements recognized for influencing awareness and behaviors. Those are, authenticity, interspecies interaction, interpretation, and thrill (Ballantyne et al. 2010; Beardsworth and Bryman 2001; Cousins et al.

Table 1 Initial factor loadings and item means

Factor and items ^{a, b}	Safari tourists (N = 362)		Zoo tourists (N = 369)	
	Mean (SD)	λ	Mean (SD)	λ
Existing connection to wildlife				
I actively seek opportunities to view wildlife	7.10 ± 1.95	.54	7.09 ± 1.83	.55
I feel a deep connection to wildlife	6.69 ± 1.93	.76	6.54 ± 1.93	.76
I am highly motivated by the need to interact with wildlife	6.26 ± 2.07	.73	6.13 ± 2.05	.76
I enjoy viewing all types of wildlife*	7.98 ± 1.24	.30	7.98 ± 1.46	.36
I spend a lot of time learning about wildlife	5.55 ± 2.11	.54	5.99 ± 2.02	.57
I have a responsibility to do all I can to protect wildlife*	7.18 ± 1.86	.41	7.10 ± 1.82	.50
Species characteristics				
I understood this animal's behaviors	6.09 ± 1.85	.50	6.15 ± 2.00	.56
I understood this animal's emotions	5.36 ± 2.18	.93	5.50 ± 2.14	.81
I felt empathy for this animal because of its emotions	5.47 ± 2.31	.64	5.74 ± 2.11	.76
This animal displayed human qualities*	5.07 ± 2.40	.30	5.81 ± 2.31	.43
This animal was intelligent*	6.79 ± 2.05	NS	6.90 ± 1.97	.41
Trip characteristics (reflective items only)				
I shared the experience with people who are important to me*	7.10 ± 2.18	.24	7.44 ± 2.05	.11
Seeing this animal makes me think of its habitat*	7.08 ± 1.90	.28	6.88 ± 2.09	.21
Information obtained from education materials/signs*	4.95 ± 2.28	.16	6.27 ± 2.35	.50
Information obtained from Interpreters/Park Rangers	6.45 ± 2.34	.85	4.92 ± 2.68	.64
The quality of interpretation was exceptionally high	6.28 ± 2.29	.76	5.77 ± 2.34	.80
Conservation caring				
My level of compassion for this species has dramatically increased because of my visit*	5.80 ± 2.00	.18	5.81 ± 1.96	.43
I am deeply concerned about the care and well-being of this animal at this site*	6.33 ± 2.02	.37	6.25 ± 2.16	.36
This species has as much right to exist as any human being*	7.35 ± 2.19	.23	7.52 ± 2.02	.31
Ensuring this species' survival is my highest priority	5.15 ± 2.27	.68	5.51 ± 2.30	.70
My emotional sense of well-being will be severely diminished by the extinction of this species	6.08 ± 2.27	.48	5.88 ± 2.38	.66
I need to learn everything I can about this species	5.01 ± 2.22	.63	5.23 ± 2.16	.76
I would protest this site if I learned of the mistreatment of this animal	6.27 ± 2.19	.48	6.45 ± 2.52	.46
I will alter my lifestyle to help protect this species	4.78 ± 2.20	.58	5.18 ± 2.31	.62
My connection to this animal has increased my connection to the species as a whole	5.82 ± 2.15	.53	5.66 ± 2.08	.72
Wildlife protection must be society's highest priority	5.95 ± 2.42	.54	5.68 ± 2.42	.64
Behavior—species oriented				
I would support entrance fees at this site being \$10 - \$25 higher, if the extra money were used for the care and survival of this species*	6.11 ± 2.32	.29	4.46 ± 2.48	.46
I will donate up to \$75 to "adopt" this animal at this site	4.34 ± 2.54	.63	3.95 ± 2.44	.78
I will make a charitable contribution up to \$150 to help purchase habitat in the wild for this species	4.11 ± 2.42	.70	3.57 ± 2.80	.75

Table 1 continued

Factor and items ^{a, b}	Safari tourists (N = 362)		Zoo tourists (N = 369)	
	Mean (SD)	λ	Mean (SD)	λ
I will become a member of an organization committed to protecting this species, within the next 6 months	3.61 ± 2.23	.72	3.84 ± 2.40	.73
I will volunteer at an event designed to help the conservation of this species, within the next 6 months	3.41 ± 2.29	.52	3.68 ± 2.36	.67
Before my visit is over, I will sign up for a mailing/email to receive updates about the care and conservation of this animal	3.20 ± 2.29	.51	3.74 ± 2.48	.64
I would write a letter/sign a petition to a government official supporting the protection of this species*	4.51 ± 2.70	.38	4.76 ± 2.72	.45
Behavior—biodiversity oriented				
Even if I never return, I will provide on going financial support to this site*	3.34 ± 2.17	.43	3.74 ± 2.35	.53
If asked, I would donate as much as \$50 to help protect a species I've never heard of*	3.49 ± 2.32	.43	3.36 ± 2.23	.53
I will endorse public policy that severely restricts future growth and development in order to protect wildlife	5.42 ± 2.50	.68	5.03 ± 2.64	.76
Elected officials' views on wildlife will be a major factor in my voting	5.08 ± 2.41	.73	4.81 ± 2.51	.73
Even when they are more expensive or harder to find, I will buy groceries and products that support wildlife conservation	5.88 ± 2.23	.58	5.18 ± 2.49	.71

λ = standardized factor loading; * item not retained

^a Rated as agreement on 9 point Likert scale (1 strongly disagree, 9 completely agree)

^b Robust statistics

2009; Curtin 2005, 2006; DeMares and Krycka 1998; Kerley et al. 2003; Myers et al. 2004; Reynolds and Braithwaite 2001; Schanzel and McIntosh 2000; Russell and Ankenman 1996; Ryan et al. 2000; Sims-Castley et al. 2005). Authenticity addressed the overall feel of the tour and included items such as proximity and diversity of wildlife. Interspecies interaction related to how wildlife responded to individual tourists. Interpretation dealt with the overall quality and quantity of interpretive experiences. Lastly, thrill incorporated elements of species rarity and mystery, and perceived levels of risk.

Conservation caring

An individual's connection to a species is represented by the factor Conservation Caring, adapted from Rabb and Saunders (2005), and includes the dimensions care '*that*', which are cognitive items, and care '*about*', which are affective items. Care for a species relates to how individuals think, feel, and act towards that species. Such items are designed to be expressions of concern and not simple reflections of attitudes (Rabb and Saunders 2005). Inclusion of these items allows this factor to address issues of the individuals' relationship to the natural world and the influence of the experience under investigation (Saunders 2003).

Using these dimensions makes this factor more in line with empathy rather than knowledge. Empathy has been shown to be a better predictor than knowledge, of helping behavior, within the context of environmental issues (Ballantyne et al. 2010; Myers et al.

2004; Schultz 2000), and is more aligned with understanding how individuals care for a species (Saunders 2003; Vining 2003). Additionally, an individual's ability to empathize with a species implies the individual is able to identify an animal's emotions and cognitions as parallel to one's own. This has been suggested as a strategy to enhance conservation behaviors (Clayton et al. 2011).

Species and biodiversity oriented behaviors

Behavioral intent was separated into two factors on the basis of how actions pertain to an individual species, or biodiversity as a whole (Table 1). Individual species behaviors included donating money to “adopt” or purchase habitat for a particular species, and volunteering. Biodiversity oriented behaviors included support for sustainability policies and purchasing wildlife friendly products. Both factors were adapted from Stern (2000) and included the dimensions: non-activist public sphere, behavior in organizations, activism, and private sphere. These dimensions are supported in the literature as being well representative of pro-conservation behaviors (Kaiser et al. 2005; Schultz 2000; Stern et al. 1999). They also align well with conservation behaviors typically associated with individual species or species cohorts (Pennisi et al. 2004; Swanagan 2000; Walpole and Leader-Williams 2002; Waylen et al. 2009). One criticism of some models is that items are too general. Items in this study focused on highly site-specific behaviors, such as donating money directly to the site for the purposes of conserving the species; donating money to purchase habitat for the species; volunteering for and becoming a member of an organization devoted to the conservation of the species, and registering for updates from the site regarding the status of the species. Making items specific to a site has been shown to improve model explanatory capabilities (Powell and Ham 2008; Stern 2000).

Survey sites and sampling procedure

In situ surveys were administered at the Kilimanjaro International Airport, Moshi, Tanzania. This site was selected because it serves as the principal entry/exit point for tourists visiting parks and protected areas within the northern circuit of Tanzania. Surveys were collected daily from October 29–November 3 2011 using a census approach. Tourists were intercepted upon their arrival in the international departure lounge of Kilimanjaro International Airport. Tourists were first asked if they spoke English, as the survey was only available in English. Those who spoke English were asked if they had participated in a wildlife viewing activity, in a natural area, while in Africa. Those who responded ‘yes’ were asked to complete a survey. A total of 416 surveys were collected, with a 98 % response rate.

Ex situ surveys were collected from visitors at two zoos and one aquarium. Brookfield Zoo (Chicago, Illinois, USA), Zoo Atlanta (Atlanta, Georgia, USA), and Shedd Aquarium (Chicago, Illinois, USA) were chosen for their high visitation rates, presence of African wildlife, immersive exhibits, and levels of interpretation.

Surveys were collected September 3–November 27 2011. Using a systematic sampling approach, visitors to Brookfield Zoo ($n = 162$) and Zoo Atlanta ($n = 87$) were intercepted by a survey team member at the central picnic grounds. Visitors to the Shedd Aquarium ($n = 203$) were intercepted at the Caribbean Reef exhibit. Surveys were only available in English. Visitors who indicated they had been on site for three hours or more were asked to participate in the survey. A total of 452 visitors were surveyed, with an 89 % response rate.

Analyses

Data were screened for missing values. Cases exhibiting missing values for more than 50 % of items per factor were removed. A total of 108 cases were removed. Data were screened for univariate and multivariate outliers following Tabachnick and Fidell (2007). No univariate outliers (± 3 SD) were detected. A total of 27 cases were removed for exceeding the criterion Mahalanobis Distance value ($\chi^2(43) = 77.38, p < .001$). The final sample size was $N = 353$ for safari tourists, and $N = 360$ for zoo tourists.

Test for metric invariance

Establishing metric invariance provides a statistical benchmark for accepting differences between populations due to true score differences in the factors as opposed to inconsistent psychometric properties. Tests for metric invariance followed the hierarchical tests for configural, metric and structural invariance consistent with Byrne (2008). These tests were used to confirm both the fit and invariance of the measurement model of the CMF viewing experience. Metric invariance was assessed across zoo sites to provide statistical support for pooling the three independent sample sites. Next, metric invariance was assessed across safari and zoo tourist samples.

Once the measurement model was confirmed for acceptable fit and invariance, the structural model was tested with the same set of hierarchical invariance tests. This was done in order to confirm fit and uncover causal pathway differences in the model between populations. The structural model varied from the measurement model in that it also included formative items for Trip Characteristics. A factor may contain both formative and reflective items (Jarvis et al. 2003). However, formative items should not be included for measurement metric invariance testing.

Results

Survey sample description

The safari tourist sample was 47 % male, 48 % female (5 % no response); mean age was 46; 87 % reported completing at least four years of college; 22 % listed the United States of America as their country of residence, 15 % listed the United Kingdom, and 10 % listed France. Demographics for the zoo tourist sample were as follows: 35 % male, 56 % female (9 % no response); mean age was 38; 63 % reported completing at least four years of college; 96 % listed the United States of America as their country of residence.

Preliminary measurement model

In structural equation modeling, measurement models are used to assess how well individual items reflect a factor. Ideally, items should only reflect and load on one factor. A factor loading is the correlation coefficient between the factor and the item. Factor loadings range from 0–1, and the higher the value, the stronger the relationship between item and factor. Measurement models may also be used to assess the validity of items in factor or scale development. A measurement model may be tested across multiple samples. The initial model generated for multi-sample comparisons is referred to as the baseline configural model.

A baseline configural model was analyzed for in situ and ex situ samples to screen for low loading and cross loading items, factor reliability, and discriminant validity. No cross loadings were detected. Thirteen items were removed for poor performance (Little et al. 1999) (Table 1). Two items were removed from Existing Connection to Wildlife, Species Characteristics, Trip Characteristics, Species Oriented Behavior, and Biodiversity Oriented Behavior. Three items were removed from Conservation Caring. Fit indices supported the model as an acceptable representation of the data (Safari: Satorra–Bentler χ^2 449.89 (236) $p < .05$; CFI = .96; RMSEA = .051, Zoo: Satorra–Bentler χ^2 416.36 (236) $p < .05$; CFI = .97; RMSEA = .046) (Byrne 2008).

Support for pooling zoo samples

To support pooling data from the three zoo sites, the following tests were performed. The configural baseline model was tested on each zoo sample site to check for group invariance. Fit indices were acceptable for each sample site (Table 2) supporting the use of the configural model to test for group invariance. Based on the hierarchical models of constraints, zoo sample sites displayed measurement and structural invariance ($\Delta SB\chi^2$ $p > .05$, respectively). As factor loadings and parameter estimates were deemed equivalent across sample sites, zoo samples were pooled and treated as a single sample (Byrne 2008).

Testing the measurement model in safari and zoo samples

The following tests were performed to support using the same measurement model for safari and zoo samples. The baseline configural model was tested on safari and zoo tourists to check for group invariance of the measurement model (Table 3). The configural model fit the data well (CFI = .96; RMSEA = .049) and was deemed an acceptable representation of the factorial structure. The test for measurement invariance revealed a decrease in fit relative to the configural model ($\Delta SB\chi^2 = 37.68$ (19); $p < .01$). Two measurements were unequal across tourist samples. One was the error covariance between the species oriented behavior items ‘donating \$75 to adopt animal’ and ‘contribute \$150 to purchase habitat’. The second was the factor loading for the biodiversity oriented behavior item, ‘purchase products that support wildlife conservation’. These constraints were released and the model re-tested. The $\Delta SB\chi^2$ was acceptable ($p < .05$), and no additional constraints were released.

The test for structural invariance revealed no harm in fit relative to the configural model ($\Delta SB\chi^2$ $p > .05$) (Table 3); parameter estimates were deemed equivalent across groups. These data support partial measurement invariance and factorial invariance across groups. The model is an acceptable representation of the data for each sample and analysis of the structural model is supported.

Testing the structural model in safari and zoo samples

In structural equation modeling, structural regression models are used to assess causal relationships between factors. These differ from measurement models, which assess relationships between items and factors. In structural regression models, beta weights reflect the effect size of the predictor factor on the dependent factor. As with measurement models, a baseline structural model can be tested across multiple samples.

The following tests were performed to support using the same structural regression model in safari and zoo samples. A baseline structural model was generated to represent the proposed relations of the theoretical model in Fig. 1. Fit indices indicated a reasonably

Table 2 Fit indices and testing outcomes for metric invariance of measurement model across zoo sampling sites

Model	CFI ^a	NNFI ^a	SRMR	RMSEA ^a	SB χ^2 (df) ^a	Δ SB χ^2 (Δ df) ^b
Preliminary CFA measurement model						
Brookfield Zoo	.95	.94	.057	.057	331.92* (236)	
Shedd Aquarium	.97	.96	.043	.052	341.34* (236)	
Zoo Atlanta	.90	.88	.066	.088	363.07* (236)	
Configural model	.94	.94	.057	.065	1022.38* (708)	
Measurement invariance	.94	.94	.064	.063	1060.53* (746)	34.58 (38) $p > .05$
Structural invariance	.95	.94	.11	.061	1083.96* (774)	53.38 (77) $p > .05$

* $p < .05$ CFI Comparative Fit Index, NNFI non-normed fit index, SRMR standardized root mean squared residual, RMSEA root mean square error of approximation, SB χ^2 Satorra–Bentler Scaled Chi square, df degrees of freedom^a Robust statistics^b Difference calculated using the Satorra–Bentler Scaled Chi square adjusted difference test (Satorra and Bentler 2001)

well fitting model (CFI = .90; RMSEA = .070) (Byrne 2008; Kline 2005). The measurement invariance model did not differ significantly from the baseline model (Δ SB χ^2 $p > .05$) supporting measurement invariance between safari and zoo tourists (Table 3).

The test for structural invariance revealed that four constraints ($p < .05$) were not equal across groups. The first was the structural path between trip characteristics and conservation caring, the second is the factor loading of 'I understood this animal's behavior', the third is the error covariance between the species oriented behavior items 'donating \$75 to adopt animal' and 'contribute \$150 to purchase habitat', and the fourth is the factor loading of 'I was able to get very close to this animal'. These constraints were released and the model re-tested. The respecified structural model fit the data well (CFI = .90; RMSEA = .068) and revealed no harm in fit relative to the configural model (Δ SB χ^2 $p > .05$) (Table 3). These data support measurement invariance and partial structural invariance across groups for the structural model. With the exception of the previous four constraints, the proposed model (Fig. 2, Table 3) predicting wildlife tourists' intention to engage in pro-conservation behavior is an acceptable representation of the data and is equivalent across safari and zoo tourists.

Influence of the CMF viewing experience on conservation caring and pro-conservation behaviors

The following results pertain to the first research question: does viewing CMF, in situ or ex situ, influence tourist-supported conservation outcomes. Fit indices for the model (SB χ^2 = 1869.94 (702), $p < .05$; CFI = .90; NNFI = .89; SRMR = .11; RMSEA = .068) indicated the model is an acceptable representation of the relationships present in the data (Byrne 2008; Kline 2005; Marsh et al. 2004). The model in Fig. 2 (also see Table 3 and 4) represents how the factors of an Existing Connection to Wildlife, Species Characteristics, and Trip Characteristics predict an intention to engage in pro-conservation behaviors.

Table 3 Fit indices and testing outcomes for metric invariance, structural invariance, and latent mean differences across safari and zoo tourists

Model	CFI ^a	NNFI ^a	SRMR	RMSEA ^a	SB χ^2 (df) ^a	Δ SB χ^2 (Δ df) ^b
Measurement model						
Configural model	.96	.96	.043	.049	868.94* (472)	
Measurement invariance	.96	.96	.046	.049	906.24* (491)	37.68 (19) $p < .01$
w/2 constraints released	.96	.96	.045	.048	892.31* (489)	21.84 (17) $p > .05$
Structural invariance	.96	.96	.058	.048	910.31* (504)	39.20 (32) $p > .05$
Structural model						
Configural model	.90	.89	.10	.070	1834.21* (668)	
Measurement invariance	.90	.89	.11	.069	1863.40* (686)	27.02 (18) $p > .05$
Structural invariance	.90	.89	.11	.069	1897.07* (706)	62.07 (38) $p < .01$
w/4 constraints released	.90	.89	.11	.068	1869.94* (702)	32.04 (34) $p > .05$
Latent means differences						
Measurement model w/zoo as ref. group	.96	.95	.047	.051	1102.64* (508)	

* $p < .05$ CFI comparative fit index, NNFI non-normed fit index, SRMR standardized root mean squared residual, RMSEA root mean square error of approximation, SB χ^2 Satorra–Bentler Scaled Chi square, df degrees of freedom^a Robust statistics^b Difference calculated using the Satorra–Bentler Scaled Chi square adjusted difference test (Satorra and Bentler 2001)

Conservation caring

An Existing Connection to Wildlife (safari $\beta = .35$, $p < .05$; zoo $\beta = .33$, $p < .05$) and Species Characteristics (safari $\beta = .32$, $p < .05$; zoo $\beta = .29$, $p < .05$) were moderate predictors of Conservation Caring. Tests constraining both direct effects across samples revealed no significant differences in β values. The factor, Trip Characteristics, was a significant predictor of Conservation Caring only in the zoo sample ($\beta = .26$, $p < .05$). This corresponds with the significant difference in parameter estimates across samples revealed in the test of causal invariance. The model accounted for 32 % (R^2 safari) and 42 % (R^2 zoo) of the variance in Conservation Caring.

Pro-conservation behaviors—species oriented behavior

Conservation Caring was the only significant predictor of Species Oriented Behavior, and was very strong (safari $\beta = .67$, $p < .05$; zoo $\beta = .65$, $p < .05$). The model accounted for 42 % (R^2 safari) and 41 % (R^2 zoo) of the variance in Species Oriented Behavior.

Pro-conservation behaviors—biodiversity oriented behavior

An Existing Connection to Wildlife was a weak predictor of Biodiversity Oriented Behaviors (safari $\beta = .18$, $p < .05$; zoo $\beta = .16$, $p < .05$). Conservation Caring was a weak predictor of Biodiversity Oriented Behavior (safari $\beta = .29$, $p < .05$; zoo $\beta = .29$, $p < .05$). Species Oriented Behavior is a moderate predictor of Biodiversity Oriented Behavior (safari $\beta = .46$, $p < .05$; zoo $\beta = .48$, $p < .05$). Tests constraining all direct effects across samples revealed no significant differences in β values. The model accounted for 58 % (R^2 safari) and 55 % (R^2 zoo) of the variance in Biodiversity Oriented Behavior.

Mean differences between factors

These results relate to the second research question: are there differences between in situ and ex situ CMF viewing experiences. The test for latent mean differences was performed with the zoo tourist sample as the reference group. Analyses revealed only two factors had means that were significantly different between safari and zoo tourists. Safari tourists scored .93 points higher on the factor Species Characteristics ($p < .05$), and .36 points higher on the factor Biodiversity Oriented Behaviors ($p < .05$) than did zoo tourists. It is important to note these are relative differences and not absolute values (Byrne 2008).

Tests constraining the disturbances of Conservation Caring, Species Oriented Behavior and Biodiversity Oriented Behavior across samples revealed R^2 values were not significantly different. The R^2 values were relatively high, and provide support for the predictive validity of the model (Kline 2005; Noar 2003).

Discussion

This study had two main goals. The first was to investigate how the CMF viewing experience influenced tourists' Conservation Caring (i.e. affective and cognitive connection to a species) and pro-conservation behaviors. The second goal was to explore how experiential elements interacted to influence outcomes, and if tourist-based conservation outcomes differed by type of experience. Survey responses were based on the animal with

Table 4 Item means, factor loadings and fit indices of final structural model predicting pro-conservation behavioral intent

Factor and items ^a	Safari tourists (<i>N</i> = 353)		Zoo tourists (<i>N</i> = 360)	
	Mean (SD)	λ	Mean (SD)	λ
Existing connection to wildlife				
I actively seek opportunities to view wildlife.	7.08 (1.95)	.71	7.12 (1.80)	.74
I feel a deep connection to wildlife.	6.69 (1.90)	.88	6.56 (1.91)	.88
I am highly motivated by the need to interact with wildlife.	6.26 (2.06)	.87	6.16 (2.02)	.88
I spend a lot of time learning about wildlife.	5.55 (2.10)	.72	6.03 (2.00)	.74
Species characteristics				
I understood this animal's behaviors.	6.08 (1.80)	.70	6.16 (1.98)	.75
I understood this animal's emotions.	5.36 (2.11)	.95	5.52 (2.12)	.92
I felt empathy for this animal because of its emotions.	5.49 (2.29)	.79	5.77 (2.08)	.83
Trip characteristics (reflective and formative items)				
I was able to photograph this animal.	7.77 (1.92)	.11	6.86 (2.25)	.13
I was able to get very close to this animal.	7.40 (2.04)	.13	6.57 (1.98)	.022
I made eye contact with this animal.	5.21 (3.02)	.15	4.85 (2.63)	.14
I directly interacted with this animal.	3.43 (2.51)	.12	3.71 (2.48)	.12
Information obtained from Interpreters/ Park Rangers.	6.44 (2.32)	.85	4.96 (2.66)	.76
The quality of interpretation was exceptionally high.	6.28 (2.28)	.96	5.78 (2.33)	.94
Conservation caring				
Ensuring this species' survival is my highest priority.	5.16 (2.28)	.79	5.55 (2.26)	.82
My emotional sense of well-being will be severely diminished by the extinction of this species.	6.08 (2.25)	.71	5.94 (2.32)	.78
I need to learn everything I can about this species.	5.00 (2.23)	.80	5.29 (2.11)	.86
I would protest this site if I learned of the mistreatment of this animal.	6.25 (2.20)	.70	6.44 (2.50)	.66
I will alter my lifestyle to help protect this species.	4.79 (2.20)	.77	5.21 (2.28)	.79
My connection to this animal has increased my connection to the species as a whole.	5.86 (2.14)	.75	5.64 (2.06)	.87
Wildlife protection must be society's highest priority.	5.91 (2.44)	.74	5.70 (2.40)	.79
Behavior—species oriented				
I will donate up to \$75 to "adopt" this animal at this site.	4.33 (2.53)	.68	3.95 (2.41)	.80

Table 4 continued

Factor and items ^a	Safari tourists (<i>N</i> = 353)		Zoo tourists (<i>N</i> = 360)	
	Mean (SD)	λ	Mean (SD)	λ
I will make a charitable contribution up to \$150 to help purchase habitat in the wild for this species.	4.10 (2.39)	.73	3.60 (2.39)	.80
I will become a member of an organization committed to protecting this species, within the next 6 months.	3.62 (2.24)	.89	3.87 (2.39)	.88
I will volunteer at an event designed to help the conservation of this species, within the next 6 months.	3.42 (2.28)	.82	3.72 (2.34)	.85
Before my visit is over, I will sign up for a mailing/email to receive updates about the care and conservation of this animal.	3.21 (2.29)	.79	3.74 (2.45)	.82
Behavior—biodiversity oriented				
I will endorse public policy that severely restricts future growth and development in order to protect wildlife.	5.44 (2.47)	.85	5.05 (2.61)	.87
Elected officials' views on wildlife will be a major factor in my voting.	5.09 (2.39)	.89	4.83 (2.49)	.91
Even when they are more expensive or harder to find, I will buy groceries and products that support wildlife conservation.	5.85 (2.28)	.79	5.19 (2.47)	.83
Fit indices ^b				
$SB\chi^2$ (<i>df</i>)	1869.94* (702)			
CFI	.90			
NNFI	.89			
SRMR	.11			
RMSEA	.068			

* $p < .05$

$SB\chi^2$ Satorra–Bentler Scaled Chi square, *df* degrees of freedom, *CFI* comparative fit index, *NNFI* non-normed fit index, *SRMR* standardized root mean squared residual, *RMSEA* root mean square error of approximation

^a Rated as agreement on 9 point Likert scale (1 = strongly disagree, 9 = completely agree)

^b Robust statistics, λ = standardized factor loading

which tourists formed the strongest connection. According to Manfredi and coworkers (2008) "...from an applied perspective, it is important to realize that emotional responses are at the heart of human attraction to, and conflict over, wildlife" (p. 51).

Influence of the CMF viewing experience on tourist-based conservation outcomes

The model, as represented in Fig. 2, demonstrates that in situ and ex situ wildlife viewing had a significant positive effect on the tourist-based conservation outcomes of Conservation Caring (i.e., a connection to a species) and pro-conservation behavioral intentions.

This is one of the first attempts to measure Conservation Caring, and doing so fills a widely recognized gap in the literature (Ballantyne et al. 2011; Cousins et al. 2009; Myers et al. 2004; Saunders 2003). Data support this factor being a successful representation of the construct (Table 4), and corroborate its role as an intermediate step to behavior (Ballantyne et al. 2007; Peake et al. 2009; Stern 2000). Additional support comes from the significant direct paths from Conservation Caring to both behavior factors, as well as very high R^2 values (Fig. 2).

Data from this study suggests that the CMF viewing experience significantly and positively impacts Conservation Caring. In this model, Conservation Caring was the only significant predictor of Species Oriented Behavior, and accounted for 42 % of the explained variance. Additionally, the path from Conservation Caring to Biodiversity Oriented Behavior was significant, although not as strong as the path to species behaviors. Wildlife tourism venues wishing to cultivate pro-conservation behaviors among visitors, should find ways to stimulate levels of Conservation Caring. One approach is to provide interpretation that employs techniques such as affective messaging and persuasive communication (e.g. Powell and Ham 2008; Skibins et al. 2012b).

In this model, pro-conservation behavior is represented by the factors Species Oriented Behavior and Biodiversity Oriented Behavior (Table 4). Species Oriented Behavior included philanthropy, volunteerism, and activism. Biodiversity Oriented Behaviors included voting behaviors and consumer habits. Data supported both factors being successful representations of their respective constructs. Additional support for the validity of the factors comes from the large amount of variance (Table 4, Fig. 2). One reason for the strong performance of both factors is the specificity of the items. In previous studies, the poor performance of factors has often been attributed to the over-generalized nature of the behaviors, and the lack of linkages between the behaviors investigated and those that are sought (Ballantyne et al. 2007; Bamberg 2003; Smith and Sutton 2008).

It is worth noting that although the model demonstrates a strong predictive ability for pro-conservation behavioral intent following a CMF viewing experience, individual item responses are still relatively low. This adds to the argument that although wildlife tourists may enter an experience with relatively high levels of a connection to wildlife, venues still have many opportunities to stimulate pro-conservation behavior intentions and performance (Beaumont 2001; Orams 1997).

Wildlife tourism venues may also benefit from providing direct opportunities for pro-conservation behaviors throughout the experience. Providing tourists with immediate opportunities to participate in a pro-conservation behaviors has been shown to successfully convert intent to action (Gwynne 2007; Powell and Ham 2008;). Given the positive influence of the CMF viewing experience on Conservation Caring, and its subsequent strong correlations to behavioral intent, it would seem advantageous to offer tourists such opportunities. This study found support for direct financial contributions on site and an interest in sustainable products. Both in situ and ex situ sites could improve conservation outcomes by providing more opportunities for tourists to make donations, while in the experience, as well as offering a wider array of wildlife friendly products and souvenirs.

Role of existing connection to wildlife on conservation outcomes

Tourists' Existing Connection to Wildlife was a moderate predictor of Conservation Caring. However, it was not a significant predictor of Species Oriented behaviors, and only a weak predictor of Biodiversity Oriented behaviors. This has interesting implications when addressing the argument of 'preaching to the choir' (Ballantyne et al. 2011).

For example, tourists' Existing Connection to Wildlife was as important a predictor of Conservation Caring as experiential elements (see below). This supports the argument that safari and zoo tourists' existing emotional attachment to wildlife was as important as the experience, and thus wildlife tourism is reinforcing and building tourists' caring.

However, Existing Connection to Wildlife was not a significant predictor of Species Oriented Behavior; and only weak at best in predicting Biodiversity Oriented Behavior (e.g. support for sustainability legislation, purchasing sustainable products). If wildlife tourists are 'the choir', one might reasonably expect a direct influence of an existing emotional attachment on intentions to engage in behaviors aimed at preserving a specific animal as well as biodiversity. However, this study found no direct support for Species Oriented Behavior and only weak support for biodiversity behaviors based on entering levels of Existing Connection to Wildlife. Thus, assuming wildlife tourists are 'the choir' and are pre-disposed to engage in pro-conservation behaviors appears unsupported by these results.

Role of experiential factors on conservation outcomes

The factor Trip Characteristics was a significant predictor only for Conservation Caring, and only for zoo tourists. The lack of a significant path to any dependent variable for safari tourists may be explained, in part, by the myriad of features composing a safari experience that were not measured in this study.

Another difference between safari and zoo tourists was the importance of proximity to the animal, as demonstrated by structural invariance constraints. This was a significant item for safari tourists, but not zoo tourists. This stands to reason as zoo tourists assume the experience will contain more direct interactions. Most zoo exhibits are designed to facilitate this experience, thus meeting the expectation. As such, a close proximity to the animal is a 'normal' experience for zoo-goers. However, part of the thrill for safari tourists is the ability to be very close to the animals (Curtin 2010) which is supported by the significance of this item.

The Species Characteristics factor also produced mixed results. The factor functioned as hypothesized in that it was a significant, albeit moderate, predictor of Conservation Caring. However, it was not a significant predictor of behavioral intent. The lack of a direct path to Biodiversity Oriented Behavior is understandable in that this factor was specific to one taxon. However, the lack of a significant path to Species Oriented Behavior is unexpected and runs contrary to previous studies (Myers et al. 2004). In this model, the factor only directly influences Conservation Caring, which in turn influences behavior. The implications of these findings for flagship species recognition are discussed below.

Comparison of experiential factors and conservation outcomes between in situ and ex situ tourists

Despite the debate regarding the potential value of in situ and ex situ wildlife viewing venues, both appear to positively influence tourists' caring and intentions to perform both species specific and general biodiversity behaviors. From an applied perspective, there were no meaningful differences between factor latent mean scores for safari and zoo tourists. Differences that are statistically significant are minor, and provide more information relevant for future studies than managerial implications. For example, safari tourists scored slightly higher on the factor Species Characteristics. This may be due to the greater diversity of animals present in a zoo, thus diluting zoo visitor responses.

Alternatively, it is possible that safari tourists are able to empathize with an animal more so than zoo tourists. However, this study was incapable of ascertaining why this occurred.

Safari tourists also scored slightly higher for intention to engage in biodiversity oriented behaviors. This may be attributable to safari tourists being more sensitized to the interconnectedness of ecosystems after an immersive safari experience (Markwell 2001; Ryan et al. 2000), and as such, are more prone to recognizing the value of biodiversity over one species. However, this explanation is speculative and not assessed by this study.

Implications for designating flagship species

Both in situ and ex situ CMF viewing is shown to positively influence caring and behaviors, thus indirectly supporting the flagship concept. However, flagships are not only expected to raise awareness and action for their own species, but for biodiversity as a whole. To that end, this study supports the notion that many CMF inspire intentions to act for both the species and biodiversity.

As shown in Fig. 2, an intention to engage in species and biodiversity oriented behaviors are strongly supported by the high R^2 values. Additionally, Species Oriented Behavior is a strong predictor of Biodiversity Oriented Behavior. This supports the notion that the CMF observed in this study could be successfully employed as flagship species. Furthermore, these results are not specific to any one species, as tourists were allowed to select the species to which they formed the strongest connection. This is highly encouraging for sites where traditional CMF are not present.

What emerged as important in forming a connection, regardless of taxon, were the emotional components of species characteristics (Table 4 and Fig. 2). This supports the ability to enlist a broad range of species as flagships, on the basis of emotional relatability and not traditional 'cute and cuddly' characteristics. This can benefit in situ sites without 'Big 5' species, and ex situ sites enhancing conservation efforts for lesser known species.

Several limitations temper the generalizability of the findings. First, tourists were asked which species they connected with during the experience. As such, responses were restricted to observed species. Viewing different species may alter results. Second, behavioral intentions and not actual behaviors were assessed. Therefore, results represent tourists' *intention to perform behaviors* and not actual behavior performance. Third, the experience was measured at a very coarse level. A more detailed comparison may reveal significant differences not detected by this survey instrument.

Conclusion

Direct exposure to wildlife, whether in situ or ex situ, appears to have the potential to be a powerful force to stimulate caring toward species of interest and pro-conservation behaviors for individual species and biodiversity as a whole. The emergence of Conservation Caring as a significant outcome and predictor of behavioral intent provides managers and practitioners empirical support for designing viewing experiences and interpretation to strengthen an emotional connection with an animal. Such experiences could focus on species' behavioral and emotional responses to environmental stimuli, as these emerged as strongly influencing Conservation Caring. For example, observing or interpreting how adults care for young or how sub-adult groups establish internal hierarchies could demonstrate understandable behaviors and emotions.

Additionally, providing opportunities for tourists to perform specific behaviors during their visit can improve conservation outcomes. Results from this study imply that tourists may be inclined to financially support species care and habitat preservation, as well as purchase wildlife friendly products. Wildlife tourism is ideally positioned to capitalize on such behavioral intentions. For example, philanthropic actions that are linked to specific animals or locations may have greater success than generic calls for support (e.g., Powell and Ham 2008). Gift shops could also present interpretation around sustainable products demonstrating the benefits communities and species receive from the purchase of such products.

This study has provided evidence for a more homogeneous treatment of wildlife tourists. The lack of differences in the results observed between safari and zoo tourists supports the strengthening of partnerships between in situ and ex situ locations to synergistically build on tourists' intention to perform pro-conservation behaviors. In fact, a more appropriate phrasing may be, 'the high degree of similarity in outcomes across safari and zoo tourists.' Partnering opportunities could include cultivating relationships between local businesses and ex situ locations, and facilitating trips and developing consistent interpretive themes between in situ and ex situ sites.

Future research may include further refinement of factors and specific attitudes, in order to pinpoint more exact differences between in situ and ex situ wildlife tourists. As protected areas struggle to justify their existence, and ex situ sites wrestle with being relevant to conservation, treating tourists, at either site, as one population provides a powerful new framework to address conservation messaging and outcomes.

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RESEARCH ARTICLE

Dolphin Shows and Interaction Programs: Benefits for Conservation Education?

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Dolphin shows and dolphin interaction programs are two types of education programs within zoological institutions used to educate visitors about dolphins and the marine environment. The current study examined the short- and long-term effects of these programs on visitors' conservation-related knowledge, attitude, and behavior. Participants of both dolphin shows and interaction programs demonstrated a significant short-term increase in knowledge, attitudes, and behavioral intentions. Three months following the experience, participants of both dolphin shows and interaction programs retained the knowledge learned during their experience and reported engaging in more conservation-related behaviors. Additionally, the number of dolphin shows attended in the past was a significant predictor of recent conservation-related behavior suggesting that repetition of these types of experiences may be important in inspiring people to conservation action. These results suggest that both dolphin shows and dolphin interaction programs can be an important part of a conservation education program for visitors of zoological facilities. Zoo Biol 32:45–53, 2013. © 2012 Wiley Periodicals, Inc.

Keywords: conservation education; bottlenose dolphins; swim-with programs; interaction programs; dolphin shows

INTRODUCTION

Atlantic bottlenose dolphins (*Tursiops truncatus*) are found throughout coastal and offshore waters. Many of the threats to these animals are anthropogenic factors including interactions with boats [Miller et al., 2008], pollution or chemical runoff [Fair et al., 2007], and overfishing [Politi et al., 2000]. Educating the public about these threats and how they can change their behavior to alleviate these threats could be a key component in management plans to help conserve dolphins and many other marine species. Although there are many different ways to educate the public (e.g., books, movies, television shows) about threats to dolphins and the environment in which they live, zoos and aquariums offer an opportunity to educate large audiences throughout the world. It is estimated that over 175 million people visited an accredited zoological institution in the United States during 2008 [AZA, 2011].

Although research on the impact of visits to zoos and aquariums has recently increased in frequency [Ogden and Heimlich, 2009], there is a lack of information on the effectiveness of zoos and aquariums in educating the public [Dierking et al., 2002]. While some believe dolphin shows

and interaction programs (swim-with programs) can benefit wild dolphins by educating visitors and inspiring them to conservation action, some question the conservation value of these types of programs [Rose et al., 2006]. Currently, there is little information available on the effects of dolphin shows and interaction programs on visitors' conservation-related knowledge, attitude, and behavior to support either claim. Roper Starch [1998] reported that visitors to facilities of the Alliance of Marine Mammal Parks and Aquariums indicated their experience had some degree of impact on their knowledge and appreciation of animals. Visitors who had a chance to interact with marine mammals reported a greater impact on their knowledge and appreciation of the animals. However, little is known about the effects of individual pro-

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grams or exhibits at these institutions. Moreover, reporting that an experience is educational does not demonstrate retention of knowledge gained from the experience.

Studies examining dolphin shows and interaction programs have been limited in scope and small sample sizes make generalization across institutions difficult. For example, Curtin [2006] found that people who participated in interaction programs both in zoological facilities and in the wild enjoyed the overall experience. However, interviews were only conducted with 14 participants and questions were open-ended with potential for observer bias. Similarly, a survey conducted by the New York Wildlife Conservation Society examined the experiences of 48 spectators of dolphin shows [Sickler et al., 2006]. Participants reported having an overall positive attitude towards dolphins. However, participants reported remembering “tricks”, training and physical ability following their experience rather than the cognitive abilities of the animals. While this study provides some insight into the perceptions of dolphins and the effects of some programs, more information is clearly needed.

The process of learning within a zoo or aquarium is referred to as informal learning. Because of this, zoological institutions are in a situation of free choice where visitors are free to choose which information they pay attention to and which of the staff members they engage in conversation. This is significant because any information that is learned results from their choices. The manner in which information is presented to the audience could be one of the primary influences on attention to specific information. Increased animal activity and animal shows can hold audience attention longer than graphic displays [Altman, 1998; Bitgood et al., 1986; Jackson, 1994; Swanagan, 2000]. Because of this, dolphin shows and interaction programs might be important tools for zoological institutions to educate a large number of visitors.

With the challenges facing dolphins and other marine organisms throughout the world, it is important to gain a better understanding of dolphin shows and interaction programs as tools for educating the public. The goal of the current study was to examine the effects of dolphin shows and interaction programs on visitors' conservation-related knowledge, attitude, and behavior. Little information is currently available on the effects of these programs and the information that is available has mostly been through studies that are difficult to generalize across facilities. The current study is the first quantitative multi-institutional study examining the effects of these programs. Determining the types of experiences that will have beneficial long-term effects is critical to ensuring the conservation of dolphins and the marine environment.

METHODS

The current study was comprised of three separate experiments; (1) examining the effects of dolphin shows, (2) examining the effects of interaction programs, and (3) examining the effects of viewing dolphins in an aquarium-type display. Additionally, information collected from partici-

pants of dolphin shows and interaction programs was used to examine the effects of demographics and previous experiences on entry levels of conservation-related knowledge, attitude, and behavior.

Participants

The participants of the study included adult visitors, over the age of 18, at six zoological institutions throughout the United States. The six institutions included the Minnesota Zoo (Apple Valley, MN), Brookfield Zoo (Brookfield, IL), Indianapolis Zoo (Indianapolis, IN), Texas State Aquarium (Corpus Christi, TX), Disney's The Seas (Lake Buena Vista, FL), and Dolphin Connection (Duck Key, FL). Four of the six facilities offered dolphin shows, and five of the six facilities offered dolphin interaction programs. The resulting sample sizes included 462 participants attending dolphin shows and 331 participants attending interaction programs. A subset of the sample from dolphin shows ($n = 164$) and interaction programs ($n = 128$) also participated in a follow-up survey approximately 3 months after the initial experience ($M = 109.5$ days; range 90–159). Additionally, adult visitors at Disney's The Seas were selected for visitors who had seen dolphins within the aquarium ($n = 100$) and a comparison group who did not view dolphins ($n = 100$).

Data Collection

All data were collected between September 2007 and July 2008. Visitors attending dolphin shows were selected to participate in a survey using a continual ask approach by choosing every n th visitor. Counting of visitors for selection discontinued while discussing the survey with a potential survey respondent and resumed after handing the clipboard with a survey to the respondent. Due to smaller attendance figures, all visitors participating in interaction programs were asked to participate in the survey. All participants that declined to take the survey were recorded with the reason for declining to determine a success rate and ensure adequate unbiased sampling.

The survey consisted of a repeated measures design where participants were surveyed before (entry), directly after (exit) and approximately 3 months following (follow-up) their experience. The entry questionnaire consisted of 48 Likert-type scale items related to conservation of dolphins and the marine environment [Adelman et al., 2000; Dierking et al., 2004; Dunlap & Van Liere, 1978; Dunlap et al., 2000; Likert, 1932]. These items consisted of 10 questions to examine conservation-related knowledge (Table 1), 17 questions to examine conservation-related attitude (Table 2), and 21 questions to examine interest in conservation-related behaviors (Table 3). It is important to note that the knowledge questions utilized in the current survey explore a person's level of perceptual knowledge and allows for exploring the degree to which people were aware of the correct response. The choice for using this format of question potentially allowed for more variability in response to explore changes

TABLE 1. Knowledge-Based Questions Utilized for the Survey**Questions**

Dolphins are an intelligent and complex species
 Feeding and/or interacting with a dolphin in the wild could be harmful for the animal
 People that live near the coast (for example Florida, Georgia or South Carolina) can affect the waters where dolphins live
 Humans and dolphins depend on some of the same resources
 People that live away from the coast (for example Illinois, Arizona, or North Dakota) can affect the waters where dolphins live
 It is illegal to feed a dolphin in the wild
 Marine debris in the ocean is not a serious problem
 Humans are severely abusing the oceans
 Overfishing is a serious problem that can affect dolphins
 Swimming with a dolphin in the wild is safe for you and the dolphin

in knowledge within these programs. The exit and follow-up questionnaires consisted of the original 48 Likert-type scale items with five additional Likert-type scale items (Table 4). Items were chosen to be representative of the geographic locations represented by the institutions and the issues related to marine conservation in each of those areas. Knowledge and attitude scale items were based on a five-point scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree). Behavioral scale items were also based on a five-point scale ranging from 1 (not interested) to 5 (planning on doing). Dichotomous responses were also indicated by visitors as to which of the behaviors they had engaged in within the previous 3 months (recent behavior) and anytime in the past (anytime behavior). Additionally, the entry question-

TABLE 2. Attitude-Based Questions Utilized for the Survey**Questions**

I care about the well-being of dolphins in a zoo or aquarium
 Dolphins do not need to be protected from humans
 Humans have the right to modify the oceans to suit their needs
 I would be willing to decrease my standard of living to protect the oceans
 Human ingenuity will ensure that we do not make the oceans unlivable
 I would be willing to pay much higher prices for common household items to protect the oceans
 I have an emotional connection to dolphins in the wild
 Humans were meant to rule over the oceans
 Dolphins are just another animal
 I have an emotional connection to dolphins in a zoo or aquarium
 Dolphins have as much right as humans to exist
 Humans will eventually learn enough about the ocean to be able to control it
 I care about the well-being of dolphins in the wild
 It is too difficult for someone like me to help protect the oceans
 I would be willing to pay much higher taxes to protect the oceans
 When humans interfere with the ocean it often has disastrous consequences
 There is no point in doing what I can for the oceans unless others do the same

TABLE 3. Behaviors/Activities Utilized for the Survey**Questions**

Become a member of a marine environmental organization
 Buy or check out a book from the library about dolphins
 Buy or check out a book from the library about the oceans
 Contact a state or government agency to get information about the oceans
 Donate money to a marine conservation organization
 Donate money to help conserve wild dolphins
 Point out behavior to friends that could harm the marine environment
 Feed a dolphin in the wild
 Recycle plastic grocery bags
 Purchase products that are marine environmentally friendly
 Spend time in nature viewing wild dolphins
 Sort glass or aluminum cans for recycling
 Use chemical insecticides or pesticides
 Talk with friends about marine environmental problems
 Visit a zoo or aquarium
 Use fertilizers in the yard
 Vote for political candidates based on marine environmental issues
 Volunteer for a marine conservation organization
 Watch a television show about the oceans
 Watch a television show about dolphins
 Write a letter to politicians about marine environmental issues

naire examined previous participation in 21 conservation-related behaviors (Table 3) during the previous 3 months and anytime in the past. The follow-up questionnaire examined participation in 21 conservation-related behaviors during the 3 months between the exit and follow-up questionnaires.

Demographic information including sex, age, number of people with the participant, race/ethnicity, and educational background was collected from all participants. Additionally, information on the reason for attending or participating in the current show or program and past experiences with dolphin tours in the wild, dolphin shows, and dolphin interaction programs were recorded. The name, email address, phone number, and information on the best time to contact the participant were collected to conduct follow-up surveys for all participants who provided consent. Follow-up surveys occurred approximately 3 months after participation either through a website or phone interviews depending on visitor preference.

In addition to examining the effects of dolphin shows and interaction programs on conservation-related knowledge, attitude, and behavior, a selection of visitors at one facility

TABLE 4. Additional Questions Utilized on the Exit and Follow-Up Surveys**Questions**

This experience was entertaining
 This experience was educational
 This experience increased my interest in learning more about dolphins and the ocean
 This experience increased my caring for dolphins and the ocean
 This was one of the best experiences of my life

were selected to examine effects of viewing dolphins vs. a comparison group (did not see a dolphin) using only the entry survey questions. Participants were selected by using a continual ask approach choosing the *n*th visitor entering a queue line at one of the attractions at Disney's The Seas. Participants were grouped based on viewing or not viewing dolphins before completion of the survey. Information on previous experiences and reasons for visiting were also collected.

Questionnaire Validation

Reliability analysis ($n = 118$) was conducted to examine properties of the measurement scales, and identify problem items to be removed from the questionnaire. The final version of the questionnaire resulted in an alpha level of 0.701 (knowledge), 0.823 (attitude), and 0.874 (behavioral intentions). Survey questions from the final version were analyzed for document reading level and analysis resulted in a Flesch–Kincaid Grade level of 7.52 with a Flesch Reading Ease level of 58.12.

Data Analysis

All information collected was analyzed to examine the distribution of the data and ensure assumptions were met for any parametric statistics including regression analysis. Due to a skew in the distribution of data on the number of dolphin shows previously attended by visitors, the data were divided into six categories with approximately an equal number of responses in each category. The resulting categories included zero dolphin shows in the past, one dolphin show in the past, two to four dolphin shows in the past, five to nine dolphin shows in the past, and 10 or more dolphin shows in the past. Additionally, education level was also coded to create a dichotomous variable based on those who had or had not received a college degree. Demographic information was analyzed to determine the characteristics of the sample. χ^2 tests of significance were used to examine differences between dolphin show/interaction program participants and dolphin viewing/comparison groups. Standardized residuals were used to determine where significant differences existed for any significant result.

Any negative Likert-type scale items (e.g., "Swimming with a dolphin in the wild is safe for you and the dolphin") were recoded to match positive responses by reversing the scale. A paired samples *t*-test was used to examine short-term changes in knowledge, attitude, and intended behavior between the entry survey and exit surveys for participants of both dolphin shows and interaction programs. A paired samples *t*-test was also used to examine long-term changes in knowledge, attitude, reported behavior and intended behavior between the entry survey and follow-up surveys for participants of both dolphin shows and interaction programs. For all results examining differences between conditions, effect sizes (Cohen's *d*) were calculated to determine magnitude of the difference. Information collected from participants viewing dolphins on conservation-related knowledge, attitude, and behavior was

compared to participants of the comparison group who did not view dolphins using an independent samples *t*-test.

Multiple regression analysis was used to examine the effect of demographics (sex and education level), previous experiences and participant type (dolphin show or interaction program) on knowledge, attitude, recent behavior, behavior anytime in the past, and behavioral intentions recorded from the entry survey.

RESULTS

A summary of the demographic information collected from participants of dolphin shows and interaction programs is presented in Table 5. Participants of both types of programs were more likely to be female (DS: $z = 7.51$, $P < 0.01$; IP: $z = 6.16$, $P < 0.01$), were more likely to be Caucasian (DS: $z = 32.35$, $P < 0.01$; IP: $z = 32.76$, $P < 0.05$), were more likely to have attended at least some college (DS: $z = 15.03$, $P < 0.01$; IP: $z = 11.98$, $P < 0.01$), and were more likely from the United States (DS: $z = 20.05$, $P < 0.01$; IP: $z = 14.61$, $P < 0.01$).

The differences between participants of dolphin shows and interaction programs included age ($\chi^2 = 30.03$, $P < 0.01$), race ($\chi^2 = 24.28$, $P < 0.01$), visit reason ($\chi^2 = 334.81$, $P < 0.01$) and location ($\chi^2 = 17.33$, $P < 0.01$). Participants of dolphin shows had a higher percentage of participants between the ages of 25 and 34 ($z = 2.46$, $P < 0.01$), a higher percentage of people of Hispanic origin ($z = 2.56$, $P < 0.01$), a higher percentage were visiting for social or family reasons ($z = 8.00$, $P < 0.01$), and a lower percentage of international visitors ($z = -2.54$, $P < 0.01$). Participants of interaction programs had a higher percentage of participants between the ages of 45 and 54 ($z = 2.46$, $P < 0.01$), were visiting for a new or unique experience ($z = 9.77$, $P < 0.01$), and had a higher percentage of international visitors compared to participants of dolphin shows ($z = 2.94$, $P < 0.01$). Table 6 includes the demographic information for participants that had viewed dolphins and the comparison group (had not viewed dolphins). There were no significant differences in demographic information between these two samples.

Table 7 presents the results examining short- and long-term changes in knowledge, attitude, behavioral intentions, and reported behavior for participants of dolphin shows and interaction programs. There were significant short-term increases in conservation-related knowledge (DS: $t = -2.73$, $P < 0.01$; IP: $t = -12.12$, $P < 0.01$), attitude (DS: $t = -2.05$, $P < 0.05$; IP: $t = -12.33$, $P < 0.01$), and behavioral intentions (DS: $t = -11.23$, $P < 0.01$; IP: $t = -13.84$, $P < 0.01$) in the short-term. Three months following their experiences, knowledge was significantly higher than what was reported during the entry survey for participants of both types of programs (DS: $t = -2.56$, $P < 0.05$; IP: $t = -8.10$, $P < 0.01$). Participants of interaction programs also showed significantly higher levels of attitudes ($t = -2.10$, $P < 0.05$) and behavioral intentions ($t = -3.13$, $P < 0.01$) during the follow-up when compared to entry survey levels. Additionally, reported

TABLE 5. Demographic Information for Participants of Dolphin Shows and Interaction Programs

Demographic	Category	Dolphin show		Interaction program		χ^2
		Percentage	N	Percentage	N	
Sex	Male	32%	149	33%	109	0.02
	Female	68%	311	67%	222	
Age	18–24	14%	65	12%	41	30.03*
	25–34	34%	153	19%	63	
	35–44	27%	125	28%	92	
	45–54	14%	63	24%	78	
	55–64	8%	38	13%	42	
	65+	3%	12	4%	13	
Race	White	81%	368	92%	304	24.28*
	Asian	2%	10	2%	7	
	African American	2%	11	1%	3	
	Hispanic	13%	57	4%	13	
	Other	2%	10	1%	2	
Education	Grade school	0%	1	1%	3	8.48
	Some high school	2%	10	4%	13	
	High school graduate	12%	57	12%	39	
	Some college	29%	132	24%	80	
	College graduate	31%	144	37%	122	
	Technology school graduate	6%	26	5%	15	
	Some graduate school	4%	19	3%	10	
	Graduate degree	15%	70	14%	46	
	New experience	12%	55	67%	221	334.81*
Visit Reason	Social experience	77%	354	14%	46	
	Learning experience	6%	27	15%	51	
	Other	5%	23	4%	14	
Location	United States	97%	447	90%	308	17.33*
	International	3%	15	10%	36	

Note. * $P < 0.01$.

TABLE 6. Demographic Information for Participants who had Viewed Dolphins and the Comparison Group (who had not Viewed Dolphins)

Demographic	Category	Dolphin View		Comparison		χ^2
		%	N	%	N	
Sex	Male	42%	42	40%	40	1.13
	Female	58%	57	60%	60	
Age	18–24	5%	5	6%	6	0.93
	25–34	28%	28	26%	26	
	35–44	43%	43	46%	46	
	45–54	11%	11	13%	13	
	55–64	11%	11	8%	8	
	65+	1%	1	1%	1	
Race	White	87%	87	90%	90	3.05
	Asian	4%	4	2%	2	
	African American	1%	1	0%	0	
	Hispanic	5%	5	7%	7	
	Other	3%	3	1%	1	
Education	Grade school	0%	0	0%	0	10.02
	Some high school	0%	0	2%	2	
	High school graduate	6%	6	6%	6	
	Some college	21%	20	15%	15	
	College graduate	43%	42	38%	38	
	Tech. School Graduate	1%	1	6%	6	
	Some graduate school	7%	7	7%	7	
	Graduate degree	22%	21	26%	26	
	New experience	11%	11	13%	13	0.85
Visit Reason	Social experience	83%	81	81%	80	
	Learning experience	4%	4	3%	3	
	Other	2%	2	3%	3	
Location	United States	95%	92	90%	89	0.52
	International	5%	5	10%	10	

TABLE 7. Short and Long-Term Effects of Dolphin Shows and Interaction Programs on Conservation-Related Knowledge, Attitude, and Behavior

	Dolphin Show						Interaction Program					
	Entry			Exit/ Follow-up			Entry			Exit/ Follow-up		
	M	SE		M	SE		M	SE		M	SE	
			<i>d</i>			<i>T</i>			<i>d</i>			<i>T</i>
Short-term												
Knowledge	4.19	0.02		4.23	0.02	-2.73**	4.28	0.02		4.52	0.02	-12.12**
Attitude	3.79	0.02		3.81	0.03	-2.05*	3.93	0.03		4.11	0.03	-12.33**
Behavioral intentions	3.08	0.03		3.29	0.04	-11.23**	3.29	0.04		3.65	0.04	-13.84**
Long-term												
Knowledge	4.29	0.04		4.38	0.04	-2.56*	4.29	0.03		4.58	0.03	-8.10**
Attitude	3.91	0.04		3.89	0.04	0.74	4.01	0.04		4.07	0.04	-2.10*
Reported behavior	0.37	0.01		0.4	0.01	-2.37*	0.33	0.02		0.4	0.02	-4.44**
Behavioral intentions	3.34	0.06		3.4	0.06	-1.27	3.35	0.05		3.52	0.05	-3.13**
												0.293

Note. * $P < 0.05$; ** $P < 0.01$.

conservation-related behavior was also significantly higher during the follow-up survey when compared to entry levels for participants of both dolphin shows and interaction programs (DS: $t = -2.37$, $P < 0.05$; IP: $t = -4.44$, $P < 0.01$). However, a comparison of people who had viewed dolphins with those who had not viewed dolphins revealed no significant differences in conservation-related knowledge ($t = -0.28$, $P = \text{n.s.}$), attitude ($t = 0.20$, $P = \text{n.s.}$), reported behavior ($t = 0.09$, $P = \text{n.s.}$), or behavioral intentions ($t = -0.39$, $P = \text{n.s.}$).

A majority of participants of both dolphin shows and interaction programs agreed or strongly agreed both types of programs were entertaining (DS: $z = 24.76$, $P < 0.01$; IP: $z = 21.66$, $P < 0.01$) and educational (DS: $z = 22.09$, $P < 0.01$; IP: $z = 21.32$, $P < 0.01$). Table 8 is a summary of the percent agreement and average scores with standard deviations for each of the questions about the participants' overall experience. A majority of participants for both types of programs also indicated that these programs increased their interest in learning more about (DS: $z = 12.38$, $P < 0.01$; IP: $z = 19.84$, $P < 0.01$) and caring for (DS: $z = 13.29$, $P < 0.01$; IP: $z = 20.06$, $P < 0.01$) dolphins and the marine environment. However, only participants of interaction programs agreed that the program was one of the best experiences of their life (DS: $z = -1.88$, $P < 0.05$; IP: $z = 17.33$, $P < 0.01$).

Table 9 presents the descriptive statistics and correlations for entry levels of knowledge, attitude, behavior, and behavioral intentions and predictor variables including education level, number of dolphin shows attended in the past, and participation in an interaction program in the past. Entry and predictor variables are based on the entire sample ($n = 777$). Follow-up variables are based on that portion of the sample ($n = 292$). The relationship between entry scores and previous experiences was examined using multiple regression analysis. In earlier models, previous experiences at institutions or on dolphin watching boat trips were included. However, there were no significant relationships observed and these variables were removed from further analyses to create a simpler model. The results from the regression analysis are presented in Table 10. The model examined was a significant predictor for entry levels of knowledge ($R^2 = 0.08$, $P < 0.01$), attitude ($R^2 = 0.11$, $P < 0.01$), recent behavior ($R^2 = 0.03$, $P < 0.01$), anytime behavior ($R^2 = 0.12$, $P < 0.01$), and behavioral intentions ($R^2 = 0.06$, $P < 0.01$). Number of dolphin shows attended in the past was a significant predictor for all variables. In addition, attending an interaction program in the past was a significant predictor for all variables, except for recent conservation-related behavior.

DISCUSSION

Participants of dolphin shows demonstrated a short-term increase in conservation-related knowledge, attitudes, and intended behavior. Follow-up results suggest that atti-

TABLE 8. Percent Agreement and Mean Rankings of Participants' Experiences with Dolphin Shows and Interaction Programs

Statement	Dolphin Show			Interaction Program		
	%	M	SE	%	M	SE
This experience was entertaining	96.7%	4.59	0.03	99.4%	4.89	0.02
This experience was educational	90.6%	4.44	0.03	98.4%	4.87	0.02
This experience increased my interest in learning more about dolphins and the ocean	68.4%	3.99	0.04	94.4%	4.65	0.04
This experience increased my caring for dolphins and the ocean	70.5%	4.01	0.04	95.0%	4.65	0.03
This was one of the best experiences of my life	35.6%	3.19	0.05	87.5%	4.39	0.04

TABLE 9. Descriptive Statistics and Correlation Coefficients for Dependent and Predictor Variables

Variable	1	2	3	4	5	6	7	8
1. Entry knowledge	-							
2. Entry attitude	0.57**	-						
3. Entry recent behavior	0.14**	0.18**	-					
4. Entry anytime behavior	0.24**	0.30**	0.56**	-				
5. Entry behavioral intentions	0.32**	0.52**	0.24**	0.35**	-			
6. Education level completed	0.14**	0.00	0.07	0.19**	0.05	-		
7. Number of dolphin shows	0.12**	0.09**	0.16**	0.28**	0.11**	0.09**	-	
8. Interaction program	0.12**	0.12**	0.04	0.14**	0.07	0.00	0.10**	-
M	4.22	3.84	0.35	0.55	3.16	0.57	1.81	0.09
SD	0.42	0.47	0.17	0.20	0.72	0.50	1.24	0.29

Note. * $P < 0.05$; ** $P < 0.01$.

tudes and behavioral intentions for these participants return to baseline levels 3 months following the show. These results are similar to other studies examining specific exhibits or programs within zoological institutions in that interest in participating in conservation-related activities often returns to baseline levels 2 or 3 months after the visit [Adelman et al., 2000; Dierking et al., 2004; Dotzour et al., 2002]. However, the participants of dolphin shows retained the conservation-related knowledge gained during the shows when surveyed 3 months following their experience and reported engaging in more conservation-related behaviors 3 months following the show compared to the 3 months before the show.

Participants of interaction programs also had a short-term increase in conservation-related knowledge, attitude, and intended behavior. Moreover, all three of these attributes were significantly higher 3 months following the programs when compared to entry levels. Similar to participants of

dolphin shows, participants also reported engaging in more conservation-related behaviors 3 months following the program compared to the 3 months before the program. These results suggest that both dolphin shows and interaction programs can be an important part of a conservation education program at a zoo or aquarium.

Similar to previous studies examining educational effectiveness of zoo exhibits [e.g., Swanagan, 1993], dolphin shows and interaction programs have the ability to increase knowledge, attitudes, and behavioral intentions in the short term. Additionally, there was a long-term sustained increase in conservation-related knowledge with reported changes in conservation-related behavior for participants of dolphin shows and long-term increases in knowledge, attitudes, behavioral intentions, and reported behavior for participants of interaction programs. The differences in the results for dolphin shows and interaction

TABLE 10. Regression Analysis Examining Previous Experiences with Dolphin Shows and Interaction Programs on Conservation-Related Knowledge, Attitude, Behavioral Intentions and Reported Behavior

Predictor variables	Knowledge β	Attitude β	Recent behavior β	Anytime behavior β	Behavioral intentions β
Sex	-0.14**	-0.20**	-0.01	0.00	-0.14**
Education level	0.12**	0.00	0.07	0.17**	0.02
Number dolphin shows	0.10*	0.08*	0.14**	0.26**	0.11**
Interaction program	0.10*	0.14**	0.03	0.11**	0.09*
Participant type	0.14**	0.18**	-0.05	0.05	0.15**
	$R^2 = 0.08**$	$R^2 = 0.11**$	$R^2 = 0.03**$	$R^2 = 0.12**$	$R^2 = 0.06**$

Note. * $P < 0.05$; ** $P < 0.01$.

programs compared to results from other zoological exhibits could be attributed to the duration of dolphin shows and interaction programs, or the entertaining value of these programs.

Previous research has shown that duration of time spent at exhibits positively correlates with learning [Falk, 1983]. It is possible that the approximate 20-min duration of dolphin shows or hour and a half duration of interaction programs is the difference between the current results and results from studies examining the effects of other types of programs. Alternatively, information being presented in the form of an entertaining show or interaction program could be the reason for the sustained increases and reported change in behavior. Ninety-seven percent of the participants of dolphin shows and 99% of the participants of interaction programs agreed or strongly agreed that the experience was entertaining. This was consistent with previous results that interactive exhibits, increased animal activity, and animal shows can hold audiences longer than graphic displays [Altman, 1998; Bitgood et al., 1986; Jackson, 1994; Swanagan, 2000], likely due to the entertaining value of those experiences. While the exact reason for the differences in the short- and long-term changes observed for participants of dolphin shows and interaction programs compared to results from previous studies on many different zoo exhibits cannot be identified, the results from the present study suggest that dolphin shows and interaction programs can be an important part of a conservation education program within a zoo or aquarium. Visitors who viewed dolphins compared to visitors who had not viewed dolphins did not demonstrate significant differences in knowledge, attitude, or behavioral intentions. Consequently, it is unlikely that just having the ability to see dolphins during a show or interaction program is the reason for increases in conservation-related knowledge, attitudes, and behavior.

Combining the results from the participant's current dolphin show or interaction program with the results from the regression analysis on entry levels of knowledge, attitude, reported behavior, and behavioral intentions, strengthens the idea that dolphin shows and interaction programs can be an important component of conservation education within zoos and aquariums. Both the number of dolphin shows attended in the past and participation in interaction programs were significant predictors of knowledge, attitudes, behavioral intentions, and reported conservation behavior anytime in the past. However, the number of dolphin shows attended in the past was also a significant predictor for recent conservation-related behavior which suggests that repeat visits to these types of programs may be important in creating long-term sustainable behavior. Since attitudes and behavioral intentions both returned to baseline levels during the 3-month follow-up surveys, having repeat experiences with these types of programs may produce long-term change.

Participants of dolphin shows and interaction programs consistently scored their experiences as entertaining

and educational, and a majority of the participants agreed the experiences increased their interest in learning more about and caring for dolphins and the marine environment. A majority of participants of interaction programs even considered the experience as one of the best experiences of their life. These results suggest that participants enjoy these types of programs, and that shows and/or interactive experiences may be important tools for inspiring visitors of zoological institutions to get involved in conservation. With the many anthropogenic threats that dolphins experience, educating the public about conservation issues surrounding dolphins and the marine environment could be a key component in management plans to help conserve dolphins and many other species. Determining ways to increase repeat visitorship may also be an important key in the conservation of wildlife and the environments in which they live. Only through continued systematic evaluation of education programs within zoos and aquariums will we be able to determine the best ways to inspire visitors to conservation action.

ACKNOWLEDGEMENTS

The authors would like to thank Dr. Randall Wells, Dr. Jackie Ogden, Dr. Andy Stamper, Melinda Pruett-Jones, and Jane Davis for their help and support during the initial phases of the project. We would also like to thank all of the initial reviewers of this project at each of the six facilities for their helpful advice that greatly improved this study. Additionally, we would like to acknowledge the primary contacts at each of the institutions for all the information and their help in scheduling data collection for this project. This includes Dr. Kevin Willis, Diane Fusco, Rita Stacey, Jennifer McGee, Mark Gonka, Jodie Baker, Tom Granberry, Debbie Prevratil, Emma Gilbert, Patrick Berry, Doug Messinger, and Sylvia Rickett. We would also like to thank all of the institutions and staff for their support and assistance throughout the duration of the project.

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My name is Peter Fricker. I am the Communications Director for the Vancouver Humane Society, and I am speaking on behalf of the Vancouver Humane Society and Zoocheck. Both our organizations oppose cetacean captivity.

The crux of this debate, in our view, is whether the Vancouver Aquarium's claimed benefits of cetacean captivity outweigh the negative impacts of that captivity on animal welfare.

The concerns over animal welfare are genuine and credible, but the Aquarium has tried to undermine those concerns with personal attacks on those who oppose its plans.

The Aquarium's CEO, Dr. Nightingale said opponents of cetacean captivity "in my view have no credibility." – CP story, Feb 21, 2017

Dr. Nightingale has referred to those who oppose cetacean captivity at the aquarium as "extremists" – "The head of the Vancouver Aquarium says "extremists" are behind a petition calling for a referendum to decide whether any new dolphins, whales or porpoises can be added to its expanding tanks." – Metro News Vancouver, Feb 17, 2014.

I would like to list some of the people who are on record as opposing cetacean captivity at the Aquarium:

Dr. Lori Marino, Ph.D. - neuroscientist and expert in animal behavior and intelligence

Dr. Naomi Rose, Ph.D. - *marine mammal scientist for the Animal Welfare Institute.*

Dr. David Duffus, Ph.D. – founder of the Whale Research Lab at the University of Victoria

Dr. Paul Spong, Ph.D. - neuroscientist and cetologist, founder of the OrcaLab on Vanc Island

BC biologist Alexandra Morton – who in 2006 received award from Van Aquarium for Excellence in Aquatic Conservation.

Dr. Jane Goodall, world-renowned animal scientist, whom Dr. Nightingale dismissed as "operating on information provided by the activist community."

Dr. Rebecca Ledger, Ph.D., animal behaviourist.

This is what Dr. Ledger told the Vancouver Province after viewing the captive belugas Quila and Aurora at the Aquarium last July:

“They’re trapped,” said Rebecca Ledger, an expert in animal behaviour, during a visit to the aquarium with The Province. “Psychologically, they are not fulfilled and are behaving abnormally. That’s sad, especially since these are very intelligent animals. We’re not talking about cockroaches, we’re talking about cetaceans.” – Vanc Province, July 2. 2016

Barbara Cartwright, CEO of the Canadian Federation of Humane Societies, which represents SPCAs and humane societies across Canada, including our own BC SPCA...

And what about the BC SPCA? – the agency with statutory responsibility for protecting animals in BC:

Here’s what the BC SPCA website says: “The BC SPCA recognizes the complex needs of cetaceans, and their highly sentient and social nature,” says [Dr. Sara Dubois](#), BC SPCA chief scientific officer. “The society is opposed to the capture, confinement, and breeding of marine mammals for entertainment or educational display, as fully providing the animals with the [Five Freedoms](#) is not possible for wild animals who require large and diverse aquatic habitats to live. It is time to phase out these displays.”

These people are not extremists. They do not lack credibility. Yet the aquarium continues to demonize those who disagree with its plans.

What does lack credibility is the Aquarium’s sudden prioritization of Beluga whale research, which it claims is the chief reason for bringing back belugas to live and be displayed until 2029 – at least another decade..

Dr. Nightingale now says research on belugas is “crucial”. – CP story, Feb 21, 2017

But in a report VHS and Zoocheck released last year, we reviewed published Vancouver Aquarium research papers in which captive cetaceans were the research subjects.

The report found just 13 peer-reviewed original scientific papers over the past 30 years in which captive cetaceans were the research subjects.

That is a low output, considering the Aquarium's statements about how important cetaceans are to its research - 13 in 30 years is very poor.

Citation analysis (number of papers produced and number of citations per paper), found that the research Impact is also low, with relatively few citations – from a low of 0 citations to high of 27.

Not exactly a world changing research program at the Vancouver Aquarium. But now, all of a sudden it is "crucial."

To say the least, all of this has left both the Vancouver Humane Society and Zoocheck skeptical about the Aquarium's justifications for bringing back belugas to live in captivity.

To put it bluntly, we think they are being brought back because they are a lucrative tourist attraction, not because they are vital to cetacean research.

Furthermore, we believe that decision is being made in spite of the strong and credible opposition of those who believe cetaceans suffer in captivity and that the Aquarium cannot justify that suffering.

That is why we believe the Aquarium should not import any more belugas and why it should end cetacean captivity.

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Still much work to do
Date: Saturday, March 25, 2017 10:48:26 AM

Taking a stand for the Whales and Dolphins is admirable. But now making laws more concrete is what is needed.

When I was younger, I enjoyed National Aquariums. But that was before I learned about everything that goes on behind the scenes.
It is time for these Aquariums to go away. There is just too much baggage and ugliness attached to the suffering of the animals.

Thank you and God Bless

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: stop bringing in cetaceans and making them live in small tanks like this - please support the amendments
Date: Friday, March 24, 2017 10:10:12 AM

The Vancouver Aquarium suffered a major defeat on March 9 when the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. The commissioners acknowledged the incredible amount of support that people had sent in. Your voice was definitely heard!

But the commissioners need to hear from you again. They are currently preparing the new by-law and it will be subject to another round of hearings around May 15th. Support for this vital amendment must continue in order for it to survive. Emails that congratulate the commissioners for making the right decision, and continuing to do so, are key right now.

This is a critical juncture – please email the Vancouver Park Board commissioners today, and ask your family and friends to do so as well!

From: s.22(1)
To: [Vancouver Park Board](#)
Cc: [PB Commissioners](#)
Subject: STOP DISPLAYING CETACEANS WITHIN VANKOUVER PARKS
Date: Friday, March 24, 2017 11:31:04 AM

Please stop permanently the displaying or importation of cetaceans. Those magnificent and intelligent creatures deserve to Live Free and happy at the open seas and not be sentenced in a life time in prison for a cruel amusement and profit. Please don't take back your previous and generous decision.

Thank you for your time

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: STOP STOP STOP the display and importation of cetaceans within Vancouver parks
Date: Friday, March 31, 2017 11:19:21 AM

Pleeeeeease do the RIGHT THING FOR THE INNOCENT DEFENSELESS IN YOUR CARE
AND EVERYWHERE!!!!!!!!!!!!!!!!!!!!!!

s.22(1)

From: s.22(1)
To: [rd](#)
Subject: SUPPORT Amendment prohibiting display& importation of cetaceans in Vancouver parks
Date: Monday, March 27, 2017 8:46:00 AM

To Whom It May Concern,

I strongly support the proposed amendment that will prohibit the display and importation of cetaceans within Vancouver parks!

Cetaceans are non-human PERSONS, self-aware highly social, highly intelligent sentient beings whom we have no right to capture and display like 'things'. Canada needs to stop the importation and display of cetaceans nationwide! It is in my opinion wholly criminal to jail & enslave cetaceans, large and small.

Even as a child, during my one and only visit to Marineland, I found the experience of watching captive cetaceans forced to perform stupid tricks for stupid humans distasteful and upsetting, believing that such majestic mysterious creatures whom we know so little about deserve not only our respect but also their freedom.

I hope to learn soon that this most important amendment will indeed PASS!

Sincerely,

s.22(1)



From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#); [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Kirby-Yung, Sarah](#)
Subject: support for ban on cetacean captivity
Date: Wednesday, March 29, 2017 9:25:32 AM

I am writing to express my support for a ban on the captivity and importation (and breeding) of cetaceans in Vancouver parks. Times have changed, and people are much more aware of how these animals suffer in captivity. No more cetaceans in captivity, please.

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Support for the ban on whales and dolphins
Date: Wednesday, March 29, 2017 7:32:06 AM

Thank you for all of your efforts in moving forward on your ban on whales and dolphins at the Vancouver aquarium. I hope you also use language that supports a ban on breeding whales in captivity. I again thank and applaud you for your efforts and will be in the crowds/ hearings/ meetings to support you.

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Support of banning aquarium captivity
Date: Friday, March 24, 2017 5:56:05 PM

Dear Sir or Madam,

I am writing to add my name in support of banning aquarium captivity. A tank of chlorinated water, no matter what size is not a suitable environment for creatures of the ocean. There is great suffering with cases of aggression, depression and other illnesses.

Please support a complete ban.

Thank you.

Yours faithfully

s.22(1)

From: s.22(1)
To:
Subject: Support the amendment- prohibits display of cetaceans within Vancouver parks.
Date: Saturday, March 25, 2017 10:24:59 AM

On March 9 the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. The commissioners acknowledged the incredible amount of support that people had sent in.

I congratulate the commissioners for making the right decision, and continuing to do so, is key right now.

The Vancouver Aquarium is currently preparing the new by-law and it will be subject to another round of hearings around May 15th. Support for this vital amendment must continue in order for it to survive. This is a critical juncture - please continue to support the amendment that prohibits the display and importation of cetaceans within Vancouver parks.

Thank you,
s.22(1)

From: s.22(1)
To: [PB Commissioners](#); [Vancouver Park Board](#); [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Kirby-Yung, Sarah](#)
Subject: Support Vancouver Commissioners and Seaside Sanctuaries Vice Vancouver Aquarium
Date: Wednesday, March 29, 2017 3:21:07 PM

Based on the below article I fully support and congratulate you on the decision to close the Vancouver Aquarium and I believe the best option is to re-focus the efforts in creating a seaside sanctuary where marine mammals can be in their natural environment (or as close as they can practically) to either be rehabilitated or for education purposes vice a concrete pool . I believe the article <http://globalnews.ca/news/3331833/vancouver-aquarium-cetacean-ban-could-mean-animals-will-have-to-be-euthanized-dfo/> is a bit of “fear mongering” by DFO or the journalists from Global news (By [Jill Slattery](#) and [Linda Aylesworth](#)) and makes it sound like there are no other options. Strong supporter of your decision to close the Vancouver Aquarium and maybe efforts to establish a marine mammal sanctuary

Well done!

s.22(1)

Action Alert: Support Vancouver Commissioners and Seaside Sanctuaries!

Mar 27, 2017 | Laura Bridgeman

[f t g](#)

Topics: [belugas](#), [Captivity Industry](#), [Sanctuaries](#)

The Vancouver Aquarium suffered a major defeat earlier this month when the Vancouver Park Board, with the support of organizations including the International Marine Mammal Project and thousands of concerned people, voted to ban cetacean captivity and imports. But this major win for belugas is being threatened – and your support at this point is crucial!

The aquarium has launched an offensive, asking their members to flood the inboxes of the Park Board commissioners and publishing op-eds that attack the proposed amendment.

Because they are the only facility on Canada’s Pacific Coast that can currently take in stranded cetaceans, the aquarium claims that these individuals may have to be euthanized.

But a seaside sanctuary is an infinitely better option than the concrete tanks at the Aquarium, and the Whale Sanctuary Project will likely see to it that stranded cetaceans will have a sanctuary to go to after all.

The draft amendment will prevent the display or importation of cetaceans within any Vancouver park – and since the Vancouver Aquarium is situated within Stanley Park, the amendment will apply to their facility. However, the amendment will not have any effect on the Vancouver Aquarium’s rehab center, which is offsite.

The Aquarium currently has beluga whales out on breeding loans with SeaWorld and other facilities, and there is speculation that they want to bring these whales back to replace the mother and daughter who died late last year. But the amendment is designed to prevent them from doing this, as so far the Aquarium has been unable to determine the cause of the [two belugas’ deaths](#).

The Park Board commissioners will be holding hearings on the amendment in the middle of May, so the pressure must be kept on so that they hold fast to their anti-captivity commitments.

From: s.22(1)
To: [PB Commissioners](#); [Vancouver Park Board](#); [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Kirby-Yung, Sarah](#)
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The Park Board commissioners will be holding hearings on the amendment in the middle of May, so the pressure must be kept on so that they hold fast to their anti-captivity commitments.

From: s.22(1)
To: [\[redacted\]](#)
Subject: Thank for for loving cetaceans too
Date: Friday, March 10, 2017 3:53:17 PM

Thank you for your unanimous vote to end cetaceans in captivity at the Vancouver Aquarium. I appreciate so much your concern for these intelligent creatures and love that you realize they should not be held in captivity. I hope to visit your facility soon.

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank u!
Date: Friday, March 10, 2017 1:36:45 PM

Dear Park Board,

I am a mother of a two and had not renewed my Aquarium membership because, although VanAqua does good work with rescue and rehabilitation, I did not want to teach my children that we can use whales and dolphins for our entertainment. Because of your decision I will be renewing my membership. I miss that cool 4D theatre and the other educational exhibits!

Thank you so much for ending the cruelty of keeping cetaceans captive.

s.22(1)

Sent from my iPhone

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Thank you- Showing compassion! Hope for humanity
Date: Friday, March 24, 2017 10:29:13 AM

Just wanted to write you and let you know how much it brightened my day hearing about your latest vote to unanimously draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. What a great day for these amazing animals. Thank you for showing compassion. I only hope others follow your example and someday we can leave in peace with all animals.

Sincerely,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you
Date: Saturday, March 25, 2017 9:21:16 AM

I loved my vacation to Vancouver and will happily return now that you have taken an enlightened approach to exploitative displays of animals and crustaceans.

s.22(1)

Sent from my iPad

From: s.22(1)
To: [PB Commissioners](#)
Subject: THANK YOU
Date: Friday, March 10, 2017 5:07:33 PM

Dear Park Board Commissioners,

Thank you very much for your decision yesterday regarding the discontinuation of keeping whales in the Vancouver Aquarium - it was the right and humane decision for those magnificent mammals' lives. I can appreciate that it was not an easy decision, and applaud your integrity and compassion listening to all those who spoke on the issue. I certainly agree that the Aquarium does an excellent job of rescuing and rehabilitating injured and abandoned sea life and this should remain their mandate, as this work alone does them credit and allows the public to see such wonderful recoveries. Large mammals deserve their own homes - the ocean.

Yours truly,

s.22(1)



From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you
Date: Sunday, March 26, 2017 2:30:11 AM

Thank you for prohibiting the display and importation of cetaceans in Vancouver parks. It was definitely the right thing to do.

Sincerely, s.22(1)

Sent from my iPad

From: [Barbara Cartwright](#)
To: [PB Commissioners](#)
Subject: Thank you and Congratulations
Date: Friday, March 10, 2017 10:22:30 AM
Attachments: [image003.png](#)
[image004.png](#)



Canadian Federation of Humane Societies
Fédération des sociétés canadiennes d'assistance aux animaux

Dear Park Board Commissioners,

On behalf of the 50 humane societies, SPCAs and animal care organizations we represent across Canada, the Canadian Federation of Humane Societies wishes to thank you and congratulate you on last night's unanimous vote to end the import and display of live cetaceans at Vancouver Aquarium. We are moved by your commitment to cetacean welfare and support your decision wholeheartedly.

The unexplained deaths of two beluga whales and a harbour porpoise at the facility last year has significantly shifted public opinion on this issue, inspiring people to take action against the cruel practice of cetacean captivity. Science is also on your side when it comes to this issue. The captivity of whales, dolphins and porpoises cannot be justified in the face of a growing body of scientific knowledge about their biological needs, which shows that they are unlikely to adapt to captivity.

As consultants on Bill S-203, which aims to ban marine mammal captivity, the Canadian Federation of Humane Societies would be more than happy to support your efforts in creating these new bylaws. Do not hesitate to reach out to us for assistance if you require it at any point in the process.

Sincerely,

Barbara Cartwright

Barbara Cartwright
Chief Executive Officer
Canadian Federation of Humane Societies
102 - 30 Concourse Gate
Ottawa, ON K2E 7V7
Tel: 613-224-8072, ext 22
Toll free in Canada: 1-888-678-CFHS (2347)
Fax: 613-723-0252
www.cfhs.ca

Find us on:



Building a Humane Canada

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you for doing the right thing!
Date: Friday, March 10, 2017 12:32:33 PM

Thank you for being on the side of history that will applauded you for doing the right thing.
I have boycotted the aquariums for years despite having two children.
The Aquarium will get more public support not having these intelligent creatures in captivity.
Have the smaller displays. That's all they need. Stop this silly expansion. It will be wasted dollars.
A referendum is also needed to get public option on record.

s.22(1)

Sent from I Phone

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Thank you for doing the right thing
Date: Friday, March 24, 2017 10:48:53 AM

Commissioners:

Thank you for creating this draft, an amendment that will prohibit the display and importation of cetaceans within Vancouver parks.

Keep it up!

s.22(1)

From: s. 22(1)
To: [Vancouver Park Board](#)
Subject: Thank you for doing the right thing
Date: Friday, March 31, 2017 10:52:55 AM

Good Afternoon,

I'd like to thank you for prohibiting the display and importation of cetaceans within Vancouver parks.

Sincerely,

s. 22(1)

A large rectangular grey box redacting the signature of the sender.

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you for ending cetacean captivity
Date: Saturday, March 11, 2017 4:45:21 PM

I am so relieved and so grateful for the Parks Board prohibiting cetaceans at the Vancouver Aquarium. Thank you!

Vancouver will be known for being a leader in its humane treatment of cetaceans, and for moving forward in new way of thinking.

Respectfully yours,

s.22(1)

Sent from [Mail](#) for Windows 10

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you for prohibiting captivity of cetaceans
Date: Friday, March 31, 2017 11:44:00 AM

Thank you for considering the welfare of these animals. Please continue to prohibit keeping cetaceans in captivity.

Sincerely
s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank You for Prohibiting Cetacean Display and Importation!
Date: Saturday, March 25, 2017 11:27:42 PM

Dear Vancouver Parks Commissioners:

I'm writing to thank you so much for prohibiting the display and importing of cetaceans within Vancouver parks! Your decision has saved these highly intelligent and socially complex creatures from a horribly cruel existence in which they would have been imprisoned in extremely tiny tanks and prevented from engaging in any natural behaviors.

I hope very much that you continue to make such a compassionate decision in regard to this issue if it comes up again.

Thank you again!

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: THANK YOU for Prohibiting Cetaceans within Vancouver Parks!
Date: Friday, March 24, 2017 9:17:02 PM

Thank you for your UNANIMOUS LEADERSHIP!
Please CONTINUE your HUMANE CARE by prohibiting any display or importation of
cetaceans within Vancouver parks.
Many thanks!!

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#); [Coupal, John](#); [Crawford, Casey](#); [Kirby-Yung, Sarah](#); [Shum, Erin](#); [Wiebe, Michael](#); [Mackinnon, Stuart](#); [Evans, Catherine](#)
Subject: Thank you for prohibiting the display and importation of cetaceans within Vancouver parks
Date: Friday, March 24, 2017 1:39:28 PM

Dear Commissioners,

I am writing to **thank you** for drafting the amendment that will prohibit the display and importation of cetaceans within Vancouver parks, and to support the by law amendment.

I want to congratulate you all for making the right decision.

Please continue in the right direction. Your actions are being noticed!

Thank you again,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Thank you for protecting marine animals
Date: Friday, March 24, 2017 8:36:39 PM

Thank you for voting to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. Please continue to do the right thing in the new by-law that will be presented for hearings in mid-May. Thank you for protecting marine animals.

Sincerely,

s.22(1)



From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you for protecting wildlife
Date: Monday, March 27, 2017 7:18:37 PM

Thank you for voting to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. Your support for wildlife is admirable.

Please continue to support this vital amendment. I urge you to make the right decision again and move forward with preparing the new by-law.

Kind regards,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#); [Coupar, John](#); [Crawford, Casey](#); [Kirby-Yung, Sarah](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#)
Subject: Thank you for standing up for cetaceans!
Date: Friday, March 24, 2017 5:20:58 PM

Dear Members of the Vancouver Parks Board,

I am writing to express my deepest gratitude for your efforts on behalf on cetaceans in your recent vote to draft an amendment that will prohibit the display or importation of cetaceans in Vancouver parks. Studies and experience have shown that cetaceans suffer considerably, both physically and psychologically, from confinement and the stresses they undergo in these environments, and your support means that fewer of these amazing creatures will have to endure this suffering merely for the entertainment of humans. Thank you for doing the right thing and setting a strong example for future communities who may be faced with similar proposals, and for being a part of bringing an end to cetacean captivity.

All best wishes,

s.22(1)



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"While I live and am able to continue, I shall never give up philosophy or stop exhorting you and pointing out the truth to any one of you whom I may meet, saying in my accustomed way: 'Most excellent man, are you who are a citizen of Athens, the greatest of cities and the most famous for wisdom and power, not ashamed to care for the acquisition of wealth and for reputation and honor, when you neither care nor take thought for wisdom and truth and the perfection of your soul?'"

Socrates, Apology (Plato 29d-29e)

From: [In Defense of Animals](#) on behalf of [Debra Nevin](#)
To: [PB Commissioners](#)
Subject: Thank You for Unanimous Vote to Draft Amendment Prohibiting Cetacean Display
Date: Wednesday, April 05, 2017 1:56:06 PM

Apr 5, 2017

Vancouver Park Board Commissioners

Dear Vancouver Park Board Commissioners,

Thank you for your compassionate and thoughtful unanimous vote to amend the Bylaws to this effect:

"The Vancouver Board of Parks and Recreation directs staff to prepare and bring forward for enactment by the Board an amendment to the Parks Control By-law to prohibit the importation and display of live cetaceans in Vancouver parks and report back not later than 15 May 2017."

Please continue your public commitment to prevent cetaceans from being brought into Vancouver Aquarium by voting yes again on May 15 approving the Amendment. We remain inspired and thankful for your public service.

Sincerely,

Mrs. Debra Nevin
187 Ramona Rd
Danville, CA 94526-2825
(925) 819-0958
nevdeb@aol.com

From: s.22(1)
To: sunnewstips@vancouversun.com; provletters@theprovince.com
Subject: Thank you for voting to ban keeping cetaceans in captivity
Date: Saturday, March 25, 2017 11:20:13 PM

I am writing to express my appreciation for the Park Board's decision to ban keeping cetaceans in captivity for entertainment. As Orca researcher who previously worked for the Vancouver aquarium, Dr. Paul Spong, said, keeping a whale in an aquarium is like holding a human in a room and depriving them of light. It is "akin to torture". I am sure that the Park Board, the Aquarium and qualified scientists will work together to find an appropriate solution for transitioning away from keeping cetaceans in captivity while ensuring that animals are provided safe environments if they cannot be released.

Sincerely,

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you for your vote on cetacean captivity
Date: Friday, March 10, 2017 6:11:38 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)

To all Vancouver Park Board Commissioners

I thank you for your insightful decision to end cetacean captivity at the Vancouver Aquarium.

Decades from now, our grandchildren will ask why, and for what reason, did we keep such intelligent, family-based mammals captive in cages. I wonder how we will respond and find moral justification for continuing to keep animals for our entertainment. We've come a long way from bear baiting in Roman times but still many animals endure great hardship and pain at the hands of man as dog fighting, cock fighting and many other sports and entertainment continue.

From the words of someone far greater than any of us, I leave you with this thought and thank you yet again for your landmark decision:

"The greatness of a nation and its moral progress can be judged by the way its animals are treated." — [Mahatma Gandhi](#)

Yours sincerely,

s.22(1)



From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you!!!
Date: Saturday, March 11, 2017 10:09:29 PM

To all of you for voting against the future captivity of whales at the Aquarium!

You have made an important decision. THE RIGHT DECISION!

Thank you all for making our city shine brightly and for making it lead by example for the rest of the world.

So happy!

s.22(1)

Sent from my iPhone

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you!
Date: Monday, March 13, 2017 1:59:50 PM

Thank you Vancouver Park Board!

The unanimous vote to bring forward a bylaw change by May 2017 prohibiting display of cetaceans at Vancouver Aquarium is a major step forward for animal welfare and for the worldwide movement to end cetacean captivity.

This is something that I have been waiting for for 32 years. I was born and raised in North Vancouver, lived in Vancouver for ten years, and now live in Maple Ridge with my husband and toddler. I have boycotted the Vancouver Aquarium since I was just 7 years old and I would never take my daughter there to witness such cruelty.

In grade one my elementary class organized a field trip to attend the Vancouver Aquarium. I can't say what happened or why I did it, but in protest I refused to go inside. When I found myself standing outside the gates just knowing all the animals that were inside suffering and in such an unnatural state of existence I felt unable to go inside and witness the pain.

Luckily one of the teachers attending agreed to wait outside with me on a park bench. I can still picture that day vividly as I watched the squirrels playing in the trees and enjoyed the natural beauty of Stanley Park. A huge contrast to the archaic concrete jungle that jailed the poor innocent beings such as polar bears, whales and penguins.

I don't know why at such a young age I had the courage to confront such atrocities, but I can only be grateful now that you too have come to the same conclusion that I did back in 1985. I have been waiting for this my whole life and I am immensely pleased that this has happened in my lifetime. You have done a great thing, be proud!

Sincerely,

s.22(1)

From: s.22(1) [REDACTED]
To: [Vancouver Park Board](#)
Subject: Thank you!
Date: Sunday, March 26, 2017 11:18:33 PM

Thank you for making the right decision in barring cetaceans from the Vancouver Aquarium. These animals' needs cannot be met in the confining tanks of aquariums. They belong in the wild. Stand by your decision and thank you again!

s.22(1) [REDACTED]

From: s.22(1)
To: [ark Board](#); [PB Commissioners](#)
Subject: Thank you!
Date: Saturday, March 25, 2017 2:17:20 PM

Hi,

Thank you for your compassionate and thoughtful unanimous vote to amend the Bylaws to this effect:

"The Vancouver Board of Parks and Recreation directs staff to prepare and bring forward for enactment by the Board an amendment to the Parks Control By-law to prohibit the importation and display of live cetaceans in Vancouver parks and report back not later than 15 May 2017."

Please continue your public commitment to prevent cetaceans from being brought into Vancouver Aquarium by voting yes again on May 15 approving the Amendment. We remain inspired and thankful for your public service.

Sincerely

s.22(1)



Virus-free. www.avg.com

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you!
Date: Sunday, March 12, 2017 9:34:47 AM

Hello commissioners,

Thank you from the bottom of my heart for being brave enough to take a stand on the captivity of cetaceans in the Vancouver aquarium! You have absolutely done the compassionate thing and this world can certainly do with more compassion...

Sincerely,
s.22(1)

Sent from my iPad

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you!
Date: Friday, March 24, 2017 12:19:14 PM

Hello...

A quick note to say thanks for disallowing cetaceans to be held captive and used for entertainment at Vancouver parks.

You are to be congratulated for being wise, kind and humane.

Sincerely,

s.22(1)

Sent from my Windows Phone

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you!
Date: Friday, March 10, 2017 5:05:12 PM

Many thanks for your votes to end captivity for whales and dolphins.

Kind regards

s.22(1)

Sent from my iPhone

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Thank you!
Date: Friday, March 24, 2017 11:04:08 AM

To the Vancouver Park Board,

I give my sincerest thanks to you for voting unanimously for the prohibition of displaying important cetaceans! This means a lot to me and to many others I know. I hope you continue to defend beautiful marine life!

Regards,
s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you!
Date: Friday, March 10, 2017 3:34:04 PM

Dear Park Board Commissioners,

On behalf of myself and my grandchildren, thank you for your recent decision to prohibit display of cetaceans at the Vancouver Aquarium. You are to be commended for your support of the world's oceans!

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Cc: s.22(1)
Subject: Thank you!
Date: Friday, March 10, 2017 12:36:55 PM

Our family is thrilled that the Park Board voted unanimously to end the cruel keeping of cetaceans at the Vancouver Aquarium.

While we believe the Aquarium offers indispensable and important environmental and educational programs, we have firmly been against their whale and large mammal exhibits for years.

Thank you for doing what many Vancouverites and Canadians have long felt to be the right thing to do.

s.22(1)

Be the change you wish to see in the world - Gandhi

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you!
Date: Friday, March 10, 2017 12:26:13 PM

You made the right decision last night re: captive cetaceans. I have been waiting for this moment since I gave up my Vancouver Aquarium membership many, many years ago.

Your decision shows Vancouver off to the world as an ethical city and I am so happy!

Thank you so much!

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you!
Date: Friday, March 10, 2017 12:20:11 PM

Let me thank you whole-heartedly for the brave decision to prohibit the display of cetaceans at the Vancouver Aquarium. The Vancouver Aquarium has been a family favourite for years, and now it will be an even better place to visit, knowing that you have all animals best interest at heart. BRAVO!

Best regards,

s.22(1)

From: s.22(1)
To: [ners](#)
Subject: Thank You!
Date: Friday, March 10, 2017 12:23:17 PM

I write today to thank the board commissioners for taking the brave and historic decision to direct its staff to bring forward a bylaw change by **May 2017** prohibiting display of cetaceans at Vancouver Aquarium.

This is a major step forward for animal welfare and for the worldwide movement to end cetacean captivity.

s.22(1)

*The only thing necessary for the triumph of evil is that good people do nothing!
If you are neutral in situations of injustice, you have chosen the side of the oppressor!
Being defeated is often a temporary condition. Giving up is what makes it permanent!
Until he extends the circle of compassion to all living things, man will not himself find peace.
I won't eat anything with a face or a mother!
Be the change you want to see in the world!
When the power of love overcomes the love of power, the world will know peace!
Truly man is the king of beasts, for his brutality exceeds theirs!
Truth is a battle of perceptions. People only see what they're prepared to confront. It's not what you look at that matters, but what you see!
Don't do nothing because you can't do everything. Do something!*

From: s.22(1)
To: [PB Commissioners](#)
Cc: [Mayor and Council Correspondence](#)
Subject: THANK YOU!
Date: Friday, March 10, 2017 5:48:48 PM

Dear Commisioners,

I want to express my sincere gratitude to all of you for your vote in favour of the motion to amend bylaws "to prohibit the importation and display" of live cetaceans — porpoises, whales or dolphins — at the aquarium.

Thank you for carefully considering the expertise of the scientists and animal welfare groups, and for listening to the public.

Thank you for your forward thinking, for showing strength and leadership in this decision.

Regards,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Cc: [PB Commissioners](#)
Subject: Thank you!
Date: Friday, March 31, 2017 11:04:03 AM

When the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks, I was thrilled. Thank you so much for taking this step to protect these animals and prevent untold suffering.

I congratulate the commissioners for making the right decision for these cetaceans and for continuing to do so with a new by-law.

Thank you again for caring and for making Vancouver a safe place for animals of all kinds, but especially for the cetaceans who might have been subject to a life unsuitable for such intelligent creatures.

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you!
Date: Monday, March 13, 2017 4:35:19 PM

Dear Park Board Commissioners,

I just want to send a big thank you from the bottom of my heart! Prohibiting display of cetaceans at the Vancouver Aquarium is a very progressive decision that was long overdue in our city. I'm very proud and happy to be living in Vancouver as a result and I hope the world is watching and as a result, will also implement such positive changes.

Thank you so much!

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Thank You
Date: Friday, March 24, 2017 10:08:58 AM

For making the right decision, and continuing to do so.

s.22(1)

A large rectangular grey box redacting the content of the email body.

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you
Date: Saturday, March 25, 2017 7:40:21 AM

Thank you for protecting cetaceans! Please continue the good work by not allowing the importation of cetaceans to Vancouver Parks.

Thank you,

s.22(1)

Sent from Windows Mail

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you
Date: Friday, March 10, 2017 3:08:15 PM

Hello - as an animal lover, I want to thank you for your recent decision to stop the practice of displaying cetaceans at the Vancouver Aquarium.
This is a much needed step and I sincerely hope others follow your example.

Thank you on behalf of all the creatures who depend on us to be their voice.

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you
Date: Friday, March 24, 2017 4:56:47 PM

Thank you for supporting an end to the cruel display of cetaceans in Vancouver!
Please continue to fight for these animals' rights--many people are behind you!

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you
Date: Friday, March 10, 2017 2:26:16 PM

Hello Members of the Vancouver Park Board,

I am writing to thank you for the unanimous motion passed by you yesterday to end captivity of cetaceans in Vancouver.

It is the humane and compassionate thing to do and reflects on Vancouver's aim to be a green city – a green philosophy which includes the well-being for all living beings with whom we share this beautiful part of the world.

Thank you again.

Yours truly,

s.22(1)

A large rectangular grey box redacting the signature of the sender.

“Consider volunteering as a mentor with [Big Sisters](#) – ask me about it!”

This e-mail and any attachment(s) are confidential and may be privileged. If you are not the intended recipient, please notify me immediately by return e-mail, delete this e-mail, and do not copy, use or disclose it. Thank you for your cooperation.

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you
Date: Friday, March 24, 2017 4:28:36 PM

I just wanted to thank you so much for making the decision to ban importation and display of the animals. This is a good step forward in the world movement in protecting and doing better by animals. Rescue is one thing - entertainment another. Money another. We as humans can and should be doing better. Thank you...for doing better.

Proud Canadian.

Sent from my iPhone

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you
Date: Friday, March 10, 2017 12:51:20 PM

Hello,

We wish to thank you for voting to prohibit the display of cetaceans at the Vancouver Aquarium. We are very pleased by your decision.

Sincerely,

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you
Date: Friday, March 10, 2017 12:45:43 PM

Thank you for your support of a bylaw change prohibiting the display of cetaceans at Vancouver Aquarium. As a Vancouver resident it's a great step to see!

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you
Date: Friday, March 24, 2017 2:24:57 PM

Many thanks to all the commissioners who voted to help innocent animals at the Vancouver Aquarium.

I sincerely appreciate your time, energy, and compassion for all living/beautiful creatures.

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you
Date: Friday, March 24, 2017 12:30:53 PM

Please continue to keep belugas out of Vancouver!

s.22(1)

A large rectangular grey box redacting the content of the email body.

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank you
Date: Friday, March 24, 2017 11:38:58 AM

Hang in there- no aquarium should import and put on display cetaceans. You are doing the right thing and I offer thanks.

s.22(1)



[website](#) | [vCard](#) | [map](#) | [email](#)

Confidentiality Note: The information contained in this e-mail and any attachments to it may be legally privileged and include confidential information. If you have received this e-mail in error, please notify the sender immediately of that fact by return e-mail and permanently delete the e-mail and any attachments. Thank you.

From: s.22(1)
To: [rk Board](#)
Subject: Thank you
Date: Friday, March 24, 2017 10:16:45 AM

I wish to thank you and congratulate you for making the right decision in pushing your amendment to prohibit the display and importation of the Earth's beautiful whale population. Stand firm and continue the fight to see this amendment through to success..

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you...
Date: Friday, March 10, 2017 1:38:20 PM

For your decision to end cetacean captivity at the Vancouver Aquarium. I applaud you.

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Thank You...Again
Date: Friday, March 24, 2017 11:39:33 AM

We want to thank the members of the Vancouver Parks Board for voting unanimously to draft an amendment to prohibit the display and importation of cetaceans within Vancouver parks.

Please know that you have our complete support as you prepare for the next round of hearings.

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you.
Date: Friday, March 10, 2017 4:13:31 PM

Hello,

I just wanted to take a moment to thank all who participated in the vote against bringing more whales into the aquarium in Vancouver. Bravo!! It is one small step but very significant indeed!

Keep up the good work.

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Cc: [PB Commissioners](#)
Subject: Thank You
Date: Friday, March 24, 2017 1:56:54 PM

I thank the Vancouver Parks Board for unanimously voting to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks.

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you
Date: Friday, March 10, 2017 5:24:02 PM

I am writing to thank you for bring forward a bylaw change by May 2017 prohibiting the display of cetaceans at Vancouver Aquarium.

This is a major step forward for animal welfare and for the worldwide movement to end cetacean captivity.

Thank you

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Thank you
Date: Sunday, March 26, 2017 7:15:29 AM

Thank you for supporting "no cetaceans for import in Vancouver parks ."
s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: thank you
Date: Friday, March 24, 2017 11:37:42 AM

Dear Vancouver Parks Board:

On March 9, your board voted unanimously to draft an amendment that prohibits the display and import of cetaceans within Vancouver parks. I understand you are currently preparing a new by-law, and it will be subject to another round of hearings.

I'm writing to encourage you to keep on this path of empathy and wisdom. The larger context is that we're in the midst of the Sixth Mass Extinction, and should be doing all we can to protect animals in the wild, rather than capture them and condemn them to lives of imprisonment.

Thank you for your attention to this matter,

s.22(1)

From: s.22(1)
To: ers
Subject: Thank You
Date: Thursday, March 09, 2017 10:08:12 PM

I hope that this email reaches all of you.

I wanted to thank you, deeply, for truly listening to everyone who spoke at the meetings regarding the Vancouver Aquarium. s.22(1)
s.22(1) who is an ex volunteer.

I am so pleased to hear of the decision made (and 'my girls' I'm sure thank you as well). There needs to be a moral compass with science and it has been dangerous for a long period of time. While I value a lot of what VanAqua has done, the lack of care was disturbing. I am no activist and non political but as you could see, it was very personal to me.

Although I do not live in Vancouver, I will be asking people to keep you in your seats. Not because I feel the right choice was made, but because you listened. This is how politics should be.

I wish I had stayed but I became too emotional. But personally, I send you all a big bear hug.

You will see me at future meetings regarding Van Aqua. Please know that I am so grateful for all of your work.

Blessings,

s.22(1)

 Virus-free. www.avast.com

From: s.22(1)
To: [\[redacted\]](#)
Subject: Thanks for helping to set a Benchmark
Date: Sunday, March 26, 2017 7:42:56 PM

Dear Commissioners

Congratulations on your decision and continued support to prohibit the display and importation of cetaceans within Vancouver parks. The Vancouver Aquarium suffered a major defeat on March 9 when the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. Thank you!

I appreciate your preparation of the new by-law which will be subject to another round of hearings around May 15th.

Regards
s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Thanks for the amendment to protect cetaceans!
Date: Wednesday, March 29, 2017 11:40:21 AM

I support for the amendment that will prohibit the display and importation of cetaceans within Vancouver parks. Thank you for making the right decision!

From: s.22(1)
To: [missioners](#)
Subject: thanks for yr decision on behalf of cetaceans and humans concerned about their welfare
Date: Wednesday, March 29, 2017 5:58:59 AM

Dear Parks Board Commissioners - here in Toronto, we are well aware of the pressure on parks boards and city officials of all kinds not to make waves, so to speak, when it comes to criticizing or legislating "animal attractions" including whales, dolphins and other cetaceans. So I know it took courage and commitment to make the decision you did on behalf of the cetaceans currently on display at the Vancouver Aquarium, and against those who cling to the notion of confining and displaying mammals, reptiles and animals of all kinds in the name of human amusement and dubious claims of "research value," and against the interests of those non-human creatures themselves.

Please feel encouraged by positive public reaction from Vancouverites and those of us beyond to yr stance, in continuing to advocate for the interests of these animals. I know there will be continued opposition to you from the Aquarium itself and elsewhere. But you have so much done the right thing and deserve credit and support for that. Many thanks ,

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: The display and importation of cetaceans
Date: Saturday, March 25, 2017 4:51:18 PM

Dear Commissioners:

Please stand strong against the display and importation of cetaceans in the new by-law that will be subject to another round of hearings around May 15th.

Thank you!

s.22(1)



From: s.22(1)
To: [Vancouver Park Board](#)
Subject: The Vancouver Aquarium
Date: Saturday, March 25, 2017 3:36:06 AM

Hi

I would like to congratulate the commissioners for making the right decision to prohibit the display and importation of cetaceans within Vancouver parks and implementing the new by-law

Regards

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: The Vancouver Aquarium
Date: Thursday, March 09, 2017 11:20:53 PM

You have all fallen prey to a very small group of lobbyists and special interest groups that have no idea regarding the unbelievable work and science that the Aquarium has done and given to Vancouver and the thousands of children and people that have gone through its doors!!

Instead of leading, being leaders and not giving into the loud minority, you failed to listen to the silent majority of Vancouver residents and the overwhelming people of the Province of BC who support this wonderful institution!!

As usual, as politicians, you have not thought about the impact of your decision, but only about your careers as politicians, and how to further feather your own beds!

It's a sad day in Vancouver, especially when some speakers brought into question the "ethics" of the Aquarium, and you all stood there and said nothing!!

A very sad day!! You should all be ashamed!!

From: s.22(1)
To: [ard](#)
Subject: Thnakyou!
Date: Friday, March 24, 2017 8:40:27 PM

Thnakyou to the board for the correct decision to vote unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. This is a great step and an important one, in re educating the public that animals are not here for our amusement.

Thanks again and keep up the good work,

Kind regards,

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Cc: [Giulia Del Gobbo](#)
Subject: Thoughts re: Cetacean Captivity
Date: Friday, March 24, 2017 3:42:38 PM

Dear Park Board members,

My name is s.22(1) and I am a master's student studying environmental history (specifically historical human-cetacean interactions) at the University of Victoria. I am writing on behalf of myself and my partner, Giulia, who is also a graduate student at the University of British Columbia, regarding the recent decision to prohibit the importation and display of cetaceans at the Vancouver Aquarium.

We have followed the issue closely since the unfortunate deaths of Qila and Aurora last fall. While we were both saddened by their passings and understand and recognize the frustrations that some Park Board members and many Vancouverites feel toward their deaths and cetacean captivity more broadly, we do not believe that all forms of cetacean captivity should be prohibited at the Vancouver Aquarium.

At issue for us is not the prohibition against the importation of the Aquarium's other belugas but rather the general restriction against the importation of any type of cetacean to the Aquarium. While we do not agree with the exploitative practices of aquaria like Seaworld and Marineland in Niagara (Marineland in particular has had countless complaints and OSPCA investigations against it in recent years), we recognize and truly believe in the value of the Vancouver Aquarium's Marine Mammal Rescue Centre. By prohibiting the importation of all cetaceans to the Aquarium, the Park Board is destroying one of the Aquarium's most valuable initiatives - both from the perspective of the animal and the human audience.

Often, the Vancouver Aquarium is called upon to help rescue distressed cetaceans throughout the Pacific Northwest. Their false killer whale, Chester, was rescued from Vancouver Island as an orphaned calf. Without the Marine Mammal Rescue Centre, Chester would have died in the wild. No one wants to see an animal die or, as a recent DFO statement reports, have to be euthanized, unnecessarily. While some might argue that Chester should have been left to die in the wild (as to avoid a life in captivity), his captivity at the Aquarium saved his life and has helped spark new interest in Aquarium visitors for false killer whales. Perhaps his quality of life is not on par with that of his wild cousins but it is better that he was rescued than left for dead.

At the same time, Chester serves as a valuable symbol for the rest of his species. Through his captivity at the Aquarium, humans, both young and old, are able to learn about the species and become more interested in their conservation and protection in the wild. Indeed, captive cetacean displays have helped to dramatically change people's perspectives toward these animals for the last fifty years. Before the Aquarium first displayed killer whales, they were believed to be ferocious killers - their captivity helped reveal that these animals were in fact more tame than initially thought and possessed unique levels of intelligence. Prior to their display at the Vancouver Aquarium in 1970, very few Canadians knew that narwhals were in fact real animals - their captivity helped to spark new interest in the species and promoted interest in their conservation as a whole. By allowing the Aquarium to continue to house distressed/orphaned animals (either temporarily or permanently), we can help save these animals from near certain death while at the same time educate children and generate new interest in these animals and their broader conservation.

Now, by no means are we saying that the Park Board should reverse its decision - in fact, we both support the idea of prohibiting the display of cetaceans in poor environments for exploitative purposes (this is not to say that the Vancouver Aquarium has poor facilities; from what we've seen in other exhibits, their facilities are comparatively better) . That being said, we hate the idea that in the near future animals like Chester will be left to die or have to be euthanized on British Columbia's beaches when they could live out the rest of their days at the Aquarium in a way that educates the public about these animals and generates new scientific research and understandings of these animals.

While some may complain that the Vancouver Aquarium would continue to profit from these animals, we see no issue with this so long as they first and foremost look to rehabilitate these animals for return

to the wild and, if not possible, continue to advance various research, education, and conservation initiatives with these animals. We would ask that the Park Board write their by-laws in a way that allows the Aquarium to continue to save orphaned and distressed cetaceans in the Pacific Northwest and that they be allowed to stay at the Aquarium temporarily or, if necessary, in perpetuity. We think that the captivity of orphaned animals, like Chester, can do more good for the specific animal and the species as a whole than if he was left to die on the beaches of Vancouver Island.

We thank you very much for taking the time to review our e-mail.

All the best,

s.22(1)

From: [Peter Hamilton](#)
To: lifeforcefoundation@hotmail.com; [Vancouver Park Board](#); [Correspondence Group, City Clerk's Office](#)
Subject: Time to Amend the Cetacean Bylaw to Truly Phase Out Cetaceans
Date: Sunday, November 27, 2016 8:30:55 PM

OPEN LETTER

To: Vancouver Parks Board and Vancouver City Council

Re: Time to Amend the Cetacean Bylaw to Truly Phase Out Cetaceans

On November 25th the Vancouver Aquarium said that the last beluga was recovering. However, "Aurora", the mother of "Qila" who died on November 16th, died later that Friday. She is the 21st beluga who has died as a result of the Vancouver Aquarium cetacean slave trade.

Lifeforce is deeply saddened at the lifelong captivity and deaths of "Aurora" and "Qila" and many others. We also deeply regret that the capture of "Aurora" and others were permitted and hopefully it will now be banned.

Broken Beluga Promises

"Aurora" was one of three captured and taken to the Vancouver Aquarium. Another beluga was severely cut by the capture ropes then was quietly released.

In 1988, the Vancouver Aquarium and the Vancouver Park Board stated "Will the Aquarium be collecting new whales for the new facility? No. The new facility is designed for the existing three belugas; 2 females and a male." However, when one died the Aquarium captured three more belugas in 1990. The pool was then overcrowded, aggression occurred, and some belugas were kept in a tiny research pool out of public view.

Lifeforce's court action failed and we went to Churchill, MB to bear witness and hopefully stop the captures. Our boats were rammed and raked with an outboard engine. One beluga hunter was charged when our volunteer was injured. Even after the belugas were captured our boats were riddled with bullets where our volunteer was sleeping. See the violence against belugas and human life. http://lifeforcefoundation.org/ecotv_play.php?id=10

At least our public awareness led to an unofficial ban on any further captures and exports by other countries. No countries have caught belugas since 1990.

Referendum is a Delay Tactic? An NPA Park Board Commissioner and a former Vancouver Aquarium VP of Marketing and Communications has proposed a referendum on captivity. For years the "Non Partisan Association" has always opposed any referendum as proposed by other parties.

Lifeforce was instrumental in getting a 1996 Cetacean Bylaw that was supposed to have phased out captivity. Under the Vancouver Charter the Park Board has the

jurisdiction to implement bylaws restricting any animals in city parks. The Commissioners should amend the 1996 Cetacean Bylaw to reinstate the intended purpose to phase out all cetacean captivity. The NPA watered down the bylaw over the years and that has perpetuated the suffering and deaths of many dolphins.

Amend the Cetacean Bylaw to Phase Out Cetaceans

Why wait until 2018 when the Aquarium plans include more pools and more belugas in 2017? Then a referendum would be too late with new prisons perpetuating cetacean captivity. A costly earlier referendum would revert back to the bylaw or amendments anyways. If the NPA wants a referendum on the aquarium's future later on then compromise by implementing a Cetacean Bylaw that will phase out cetacean captivity now! Stop the Suffering now!

Any referendum should:

1. Ask if Vancouverites support the Cetacean Bylaw that would be amended to phase out the captivity of cetaceans.
2. Include a moratorium on all expansion plans, such as more beluga pools and belugas, pending the results.

A New Expansion Permit and Public Comment Period

It was a 2006 expansion plan that was approved for completion in 2010. This plan was not implemented due to lack of funding. That eight part expansion was the largest in history nearly doubling the size. It included river otters (that Vancouverites voted against during a 90s referendum to close the Stanley Park Zoo), beaver (who are found living freely in Stanley Park), and suggested having Arctic Foxes and other new species of wildlife.

The 10 year old expansion permit should be cancelled and the Vancouver Aquarium should apply for an updated permit that would allow for a public comment period. Since 2006, new species have been acquired, new species may be imported, and there are new business plans such as aquaculture for the sushi market and operating an aquarium in Spain. Further, the last Arctic Canada expansion included narwhals. Is this still part of their secret plans?

The SADquarium

"Aurora" is the 52nd cetacean who has died as a result of the Vancouver Aquarium cetacean slave trade in the past 52 years. At least 9 orcas, 7 narwhals, 21 belugas, 1 Harbour porpoise, and 14 Pacific white-sided dolphins have died! No orca babies survived and belugas also died at a very young age. Qila had a failed pregnancy in 2001 and her 3 year old died in 2011. Her mom, "Aurora", lost another 3 year old in 2005.

Aurora was one of four captured in 1990 in Manitoba. One was severely cut by the capture ropes and was quietly released. (Two males and a female captured in 1985 were later sent to Sea Worlds for breeding. In 2015, Nanuq, the father of Qila, died from a fractured jaw during a fight with other belugas.)

History proves that experiments on captives are not necessary. There is a lucrative research industry mainly funded by public taxes under the guise of conservation. For example, beluga pollution/diet studies started in the 70s and communication studies started in 1947. All were done by field studies. It is already known that major threats include the decimation of fish populations, pollution, military weapon tests, and disturbances from boats.

The ongoing inhumane captivity abuses include the causes of illnesses/deaths can be uncertain, the ongoing deaths are premature, the breeding programs are a failure, the abnormal stereotypical and neurotic behaviours are common and the physical and psychological needs cannot be provided for in pool prisons. View "Belugas: Far From Home" http://lifeforcefoundation.org/ecotv_play.php?id=25

52 Deaths in 52 Years

Over 50 Years and Imprisoning Dolphins Is Still a Crime Against Nature!

More Parkland Means More Captives with Your Tax Money!

Stop the Vancouver Aquarium expansion in order to stop the imprisonment and the destruction of Stanley Park green space. More Pools Means More Captives!

For Freedom,

Peter Hamilton

Lifeforce Founder

From: s.22(1)
To: [PB Commissioners](#)
Subject: Van. Aquarium
Date: Friday, March 10, 2017 2:40:11 PM

Dear Commissioners

Huge Congratulations on moving Van Aquarium into the 21st century.
The cruelty imposed by them is unreal. The whole world is turning away from this captive treatment of our wildlife, whether on land or sea. Circuses are being banned & phased out everywhere.

This is the direction the world is moving in & thank you so much for making this courageous decision.

We are confident had this issue been put to a vote province wide that the majority of BC residents would support your decision.

Sincerely

s.22(1)

From: s.22(1)
To: [Board](#)
Subject: Vancouver Aquarium
Date: Friday, March 24, 2017 6:17:08 PM

Dear Vancouver Park Board:

Thank you for voting to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks.

Yours truly,

s.22(1)

A large rectangular grey box redacting the signature and any text below it.

From: s.22(1)
To: [PB Commissioners](#); [Mayor and Council Correspondence](#)
Subject: Vancouver Aquarium - Bylaw
Date: Wednesday, March 08, 2017 4:39:51 PM

Please implement a BYLAW to end cetacean captivity at the Vancouver Aquarium.

Best,

s.22(1)



From: [Lorraine Garnier](#)
To: [Vancouver Park Board](#); [PB Commissioners](#); [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Kirby-Yung, Sarah](#)
Subject: Vancouver Aquarium ban cetacean captivity and imports
Date: Tuesday, March 28, 2017 9:36:42 PM

Aloha Oe!

As a citizen in Hawaii, who is in the middle of legislation to phase out captivity and end breeding at the three marine entertainment parks here, I commend you whole-heartedly for your immense efforts to ban cetacean captivity and importing any mammals back into the aquarium.

Our team here at the Ceta Coalition of Hawaii support your efforts and stand with you each day in your steps forward.

sincerely,

Lorraine
Lorraine Garnier
808-375-0248

From: [Lorraine Garnier](#)
To: [Vancouver Park Board](#); [PB Commissioners](#); [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Kirby-Yung, Sarah](#)
Subject: Vancouver Aquarium ban cetacean captivity and imports
Date: Tuesday, March 28, 2017 9:36:42 PM

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Our team here at the Ceta Coalition of Hawaii support your efforts and stand with you each day in your steps forward.

sincerely,

Lorraine
Lorraine Garnier
808-375-0248

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#); Coupar.John@vancouver.ca; Crawford.Casey@vancouver.ca; Evans.Catherine@vancouver.ca; [Coupar, John](#); Kirby-Yung.Sarah@vancouver.ca; mackinnon.stuart@vancouver.ca; shum.erin@vancouver.ca; wiebe.michael@vancouver.ca
Subject: Vancouver Aquarium Cetacean Captivity To Be Stopped!
Date: Saturday, March 25, 2017 1:39:52 PM

Hi,

PLEASE protect the Cetacean! Support for this vital amendment must continue in order for it to survive on May 15th, 2017. Please do the right thing!!!!

Regards,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver Aquarium Cetaceans Ban
Date: Friday, March 24, 2017 12:15:51 PM

I'm writing to let you know how strongly I disagree with your decision to ban cetaceans at the Vancouver Aquarium. I fear your decision was based more on wanting to side with the popular choice than to actually choose what was best for these animals as a whole. If you were more concerned with what was best for whales, dolphins and porpoises you would have chosen to vote AGAINST banning them at the aquarium. Because of your short sighted decision, now more cetaceans will be in danger, rather than helped. You thought banning any cetacean from being displayed at the aquarium was the right thing to do, something that would be good for the animals, but now as a result of this decision the aquarium will no longer be able to save any hurt or stranded cetaceans and they will die. How is the decision better for these animals? Also, now the aquarium will no longer be able to carry out the research they were conducting in order to save endangered species. How is that better for these animals? I recently read how the Vaquita is the most endangered porpoise in the world. Research the aquarium was doing could have eventually led to a solution to help save these animals, but now they aren't allowed to do that research and therefore cannot help save them. How is that a better decision for these animals? The aquarium is not a place that exploits its animals. It loves them, cares for them and teaches others to also love and care for the many beautiful creatures it has. By continuing to allow the Vancouver Aquarium to house cetaceans, the many whales, dolphins and porpoises that would have died as a result of an injury, being stranded or being abandoned would be able to have another chance at life in a place that has trained professionals that would love and care for them, and they would probably have a better life, free of pollution, oil spills and whatever else us humans are doing to ruin the oceans and its beautiful creatures.

From: s.22(1)
To: [PB Commissioners](#)
Subject: Vancouver Aquarium debate
Date: Wednesday, March 08, 2017 3:10:18 PM

Dear Sirs/Madams,

Please do not allow Vancouver Aquarium to keep cetaceans in captivity. Contrary to what Mr Nightingale told Vancouver Sun, it's not the voice of well-funded activists, it's a voice of Vancouver.

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Vancouver Aquarium Set Cetaceans Free!!!
Date: Friday, March 24, 2017 1:06:32 PM

To the Vancouver Commissioners:

Thank you for making the right decision on March 9 to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. As you prepare the new by-law subject to another round of hearings on May 15th, please continue to oppose cetaceans in the Vancouver Aquarium as these lovely marine animals deserve to be free in the wild or a HUMANE sanctuary!!! Thank you again for making the right decision for these marine animals, and please continue to do so.

Merci beaucoup pour sauver les bêtes sauvages de la mer!!!

Thank you,

Sincerely,

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: Vancouver Aquarium
Date: Friday, March 10, 2017 11:08:03 AM

Hi there,

I am a long patron of the Vancouver Aquarium. While I respect and understand the decision to ban captivity of dolphins and whales in the Aquarium, I don't think it is wise to push the policy so quickly for two reasons.

First of all, it is for the well being of the two dolphins and false killer whales, Chester, Helen and Daisy. I understand that they would either have to be moved to a new facility as they would be able to survive in the wild or they might be euthanized. (Please respect the assessment of the biologist and the vet regarding that. They know Marine animals a lot more than you.). An abrupt move can create more harm to the well being of the three of them.

Secondly, losing two of their major attractions without any planned replacements so abruptly can hit the Aquarium's business quite badly. It will be nice to give them some grace period to update their facility to reflect the latest policy gradually will make it a lot easier for the management.

For many young families for Greater Vancouver, the Aquarium has been a great educational venue to introduce children to Marine/Water life and inspire a life long passion for the environment. The facility is also one of the major tourist attractions in the region. On behalf of my family, I would appreciate the Vancouver Park Board to work hard in supporting the Aquarium as well.

s.22(1)

From: s.22(1)
To: k Board
Subject: Vancouver Aquarium
Date: Friday, November 25, 2016 12:06:05 PM

Please do not allow for any expansion of this facility. At a time when such places have seen decline in attendance, strong criticism from millions of people including celebrities who refuse to perform there, why would you consider enlarging the prisons for marine mammals? Pretending their misery will serve some "greater good" is rubbish. Field studies have taught us much about marine life. We know, for example, that most every animal, fish and plant in the ocean is under unprecedented stress from toxins, global warming, and over fishing - which includes taking sea animals for exhibit aka profit.

Shame on us all for ever having attended such a display. At least some of us have learned and changed and become advocates for our fellow beings in the sea. We may not see them as easily as the birds or land mammals, but they deserve every bit as much attention.

Before it is too late, stop taking any being from their homes, enlarge any current facility ten times the current size until the animal dies...it would still be nothing near what the animal needs or deserves.

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#); [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Kirby-Yung, Sarah](#)
Subject: Vancouver Aquarium
Date: Tuesday, March 28, 2017 11:32:13 AM

Thank you for doing the right thing and banning cetacean captivity and imports from the Vancouver Aquarium! Please continue your fight against the aquarium -- all cetaceans deserve to live in freedom!

s.22(1)



From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#); [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Kirby-Yung, Sarah](#)
Subject: Vancouver Aquarium
Date: Tuesday, March 28, 2017 11:32:09 AM

Thank you for making the right decision to end captivity in Vancouver!
Please stay the course and do not be intimidated by those who profit from the suffering of these cetaceans.

Thank you so much for your understanding of the science, your reason, judgement and compassion.

~ Sincerely,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver Aquarium
Date: Monday, March 27, 2017 7:21:02 AM

Dear Commissioners,

I was remiss in not writing sooner to thank you for and congratulate you on your brave and right decision to ban the keeping of cetaceans in Vancouver parks. I know you were under some pressure to vote the other way, but you held to your convictions and did the right thing. It was a proud moment in Vancouver history.

I know there are more hurdles to jump before your decision becomes law. And I know you will be under some pressure to change your minds before that law can be enacted. But please know that a great many citizens of Vancouver are 100-per-cent behind you. We don't want to see cetaceans in our parks any more, and we're grateful that the park board has chosen to fight this fight in the way it has.

So again congratulations and thank you. You've done the right thing. Don't let the aquarium or the Vancouver Sun convince you otherwise.

s.22(1)



From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Vancouver Aquarium
Date: Saturday, March 25, 2017 12:32:02 PM

Dear Commissioners.

I come from reading that the Vancouver aquarium is preparing to vote on the importation of cetaceans again. As we know, Dolphins and whales, collectively called cetaceans, are slaughtered for food or snatched from the wild for lifetimes of confinement, they separated from their families (yes, they make bonds in the ocean!) and then sold to live a miserable life. In captive facilities they are abused as glamorized commodities, either torn from the wild or bred into a lifetime of captivity, and used as profit-generating objects of entertainment masqueraded as education and conservation. In the wild, cetaceans and all marine life needs increased protection from rapidly growing human-caused threats to their ecosystems.

Please vote for what is right- vote to protect marine life and cetaceans

Kind Regards,

s.22(1)

"If you pick up a dog and make him prosperous he will not bite you. This is the principal difference between a dog and a man." Mark Twain

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver Aquarium
Date: Friday, March 24, 2017 2:09:55 PM

Leave those dolphins, and cetaceans alone. No more aquariums!
Thank you for your time and attention.

From: s.22(1)
To: [PB Commissioners](#)
Subject: Vancouver Aquarium
Date: Friday, March 24, 2017 11:56:08 AM

I am writing to express my strong support for this vital amendment that will prohibit the display and importation of cetaceans within Vancouver parks.

Thank you to all commissioners for making the right decision, and continuing to do so.

Thank you for your time.

s.22(1)

~Saving one animal will not change the world, but the world will change for that one animal.~

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Vancouver Aquarium
Date: Friday, March 24, 2017 10:45:58 AM

Dear Commisionners,

First of all, I`d like to thank you for voting to draft an amendment which will prohibit the display and importation of cetaceans within Vancouver parks. It`s a huge step towards the future where no animal would suffer from people`s hand (I sure hope so). Please keep up what you are doing and support the amendment that will protect cetaceans in Vancouver, thus you will make a precedent for all the aquariums all over the world. Thank you for your consideration.

Sincerely,

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Vancouver aquarium
Date: Thursday, March 09, 2017 11:10:28 PM

I am very troubled by this decision - as a tax payer I would have like to voted.

I trusted u would make the right decision I guess I was wrong

Very disappointed

s.22(1)

Sent from my iPhone

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver Aquarium
Date: Monday, November 28, 2016 11:02:31 AM

To whom it may concern,

I am very sorry to hear of the loss of the two Beluga Whales. Please pass my condolences on to the staff that cared for these beautiful animals. I have had the pleasure of seeing Beluga whales in Hudson Bay at Churchill MB. They are a beautiful animal to see in their natural habitat. Please discontinue the practice of keeping Beluga whales at the Vancouver Aquarium.

Thank you,

s.22(1)

A large rectangular grey box redacting the signature and any text below it.

From: s.22(1)
To: [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Kirby-Yung, Sarah](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Vancouver Park Board](#)
Subject: Vancouver Aquarium
Date: Thursday, March 16, 2017 10:11:38 PM

To whom it may concern -

I am writing to request that the decision of Park Board be re-considered, and put to a city-wide referendum. The Vancouver Aquarium provides an essential educational experience for local and international visitors. In addition the Marine Mammal Rescue Centre is an invaluable resource for research, and respected worldwide for the high quality care provided.

I grew up in Vancouver and visited the Aquarium many times as a child. I became a youth volunteer during secondary school, and continued to volunteer during my undergraduate degree at UBC. This exposure to top quality research and education inspired my career in health care, and I am now a physician with the Fraser Health Authority.

The brief debate at the Parks Board did not truly represent both sides of the issue, and did not provide an adequate representation of the valuable work done at the Aquarium. This issue deserves a thorough debate, and the input of all stakeholders.

Thank you,

--
s.22(1)



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From: s.22(1)
To: [PB Commissioners](#)
Subject: Vancouver Aquarium
Date: Wednesday, March 08, 2017 5:39:43 PM

Dear Commissioners:

I implore you to pass a bylaw that would end the imprisonment of cetaceans at the Vancouver Aquarium. Let's end the suffering of these animals once and for all.

Please

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver Aquarium
Date: Monday, November 28, 2016 6:16:26 PM

I just witnessed with disgust news that one of the members of the Board is putting a motion forward to put the Vancouver Aquarium "live exhibits out of business". The millions of people who have enjoyed the whales at the Aquarium, the knowledge that has been gained by studying the animals and the degree of love for them is unbelievable. Add to this the millions upon millions of tourist dollars that have been gained needs to be considered.

I doubt folks will come to the city and pay money to walk around the homeless on Hastings Street; but perhaps the Board should work with Mayor Moonbeam and SPEND millions to promote this alternative.

The fact that you would consider doing away with this is absolute garbage.

I hope anyone that supports this motion will be driven from office - the sooner the better!

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver Aquarium
Date: Friday, March 31, 2017 9:54:38 PM

Thank you for making the right decision for the animals. Please continue to make decisions that will benefit the health and safety of animals in Vancouver.

Thank you,

s.22(1)

Support Ric O'Barry's Dolphin Project at <https://dolphinproject.net/>

From: s.22(1)
To: [PB Commissioners](#)
Subject: Vancouver Aquarium
Date: Friday, March 24, 2017 1:44:32 PM

Hi

I do not live in Vancouver but am a visitor to the Aquarium. I am very upset at your decision regarding cetations at the aquarium. I do not agree with your decision at all. I feel you need to listen to the experts rather than a small group of activists. The aquarium does excellent work caring for the animals the dfo says are unreleasable. They are the only marine mammle rescue in Canada. All the science says the aquarium should continue its good and necessary work. I can not imagine the aquarium not rescuing and caring for marine animals in need. Have you even thought about the Chesters and other cetations that are in distress and need rescuing. I also cannot imagine euthanising animal in distress when the aquarium can step in and help. No one thought Chester would live but the scientists and vets at the aquarium did what they are trained to do and saved him. It was the dfo that said Chester will stay in Vancouver.

I hope you see fit to change your decision as all the science says you are wrong. It is not too late. If this is a political decision, that small group of activists won't make a difference on your reelection next year. The much larger group of voters that support the aquarium and the marine mammle rescue will make a difference on voting day next year.

Thank you for taking the time to read my email.

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Vancouver Park Board : Thank you
Date: Saturday, March 25, 2017 7:41:27 AM

To :
The Vancouver Parks Board,

Dear Madam, dear Sir,

On March 9 the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. You acknowledged the incredible amount of support that people had sent in.

I read that you are currently preparing a new by-law and that it will be subject to another round of hearings around May 15th.

I want to thank you for your compassionate and thoughtful unanimous vote to amend the Bylaws to this effect:

"The Vancouver Board of Parks and Recreation directs staff to prepare and bring forward for enactment by the Board an amendment to the Parks Control By-law to prohibit the importation and display of live cetaceans in Vancouver parks and report back not later than 15 May 2017."

Please continue your public commitment to prevent cetaceans from being brought into Vancouver Aquarium by voting yes again on May 15 approving the Amendment. We remain inspired and thankful for your public service.

Sincerely,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#)
Subject: Vancouver Park Board : Thank you
Date: Saturday, March 25, 2017 1:41:42 PM

The Vancouver Parks Board,

Dear Madam, dear Sir,

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Please continue your public commitment to prevent cetaceans from being brought into Vancouver Aquarium by voting yes again on May 15 approving the Amendment.

We remain inspired and thankful for your public service.

Sincerely,

s.22(1)



From: s.22(1)
To: [Vancouver Park Board](#)
Cc: [PB Commissioners](#)
Subject: Vancouver Park Board
Date: Saturday, March 25, 2017 11:18:56 PM

Hello:

The following is a copy/paste article from In Defense of Animals. I support their mission on this cause.

Thank you,

s.22(1)

Vancouver Park Board Needs To Hear From You – Again!

Mar 22 - Posted by Laura Bridgeman

TAG: CETACEANS, IN DEFENSE OF ANIMALS, VANCOUVER AQUARIUM

The Vancouver Aquarium suffered a major defeat on March 9 when the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. The commissioners acknowledged the incredible amount of support that people had sent in. Your voice was definitely heard!

But the commissioners need to hear from you again. They are currently preparing the new by-law and it will be subject to another round of hearings around May 15th. Support for this vital amendment must continue in order for it to survive. Emails that congratulate the commissioners for making the right decision, and continuing to do so, are key right now.

This is a critical juncture – please email the Vancouver Park Board commissioners today, and ask your family and friends to do so as well!

Send comments to:

PBCComment@vancouver.ca OR PBCCommissioners@vancouver.ca

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver Park Board
Date: Saturday, April 01, 2017 10:28:47 PM

The following is a copy/paste from In Defense of Animals website. I support their cause on this issue. Thank you. s.22(1)

The Vancouver Aquarium suffered a major defeat on March 9 when the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver parks. The commissioners acknowledged the incredible amount of support that people had sent in. Your voice was definitely heard! But the commissioners need to hear from you again. They are currently preparing the new by-law and it will be subject to another round of hearings around May 15th. Support for this vital amendment must continue in order for it to survive. Emails that congratulate the commissioners for making the right decision, and continuing to do so, are key right now. This is a critical juncture – please email the Vancouver Park Board commissioners today, and ask your family and friends to do so as well!

From: s.22(1)
To: [Vancouver Park Board](#)
Cc: [PB Commissioners](#)
Subject: Vancouver Park Board
Date: Saturday, March 25, 2017 11:18:56 PM

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The following is a copy/paste article from In Defense of Animals. I support their mission on this cause.

Thank you,

s.22(1)

Vancouver Park Board Needs To Hear From You – Again!

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This is a critical juncture – please email the Vancouver Park Board commissioners today, and ask your family and friends to do so as well!

Send comments to:

PBCComment@vancouver.ca OR PBCCommissioners@vancouver.ca

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver Park..
Date: Saturday, March 25, 2017 7:32:49 AM

Dear Commissioner,
Congratulations,, and THANK YOU for making the correct decisions so far!!!

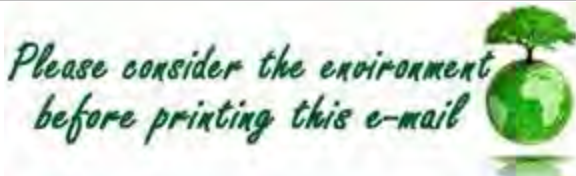
I plea to you and Pray for you all, to remain steadfast in this.

After all, our Creator expect this frfom us all.

I salute you,

Kind Regards,

s.22(1)



This email has been checked for viruses by Avast antivirus software.

www.avast.com

From: s.22(1)
To: [PB Commissioners](#); [Vancouver Park Board](#)
Subject: Vancouver parks
Date: Friday, March 24, 2017 2:35:54 PM

To Whom It May Concern;

I Thank you so much for prohibiting the display and importation of cetaceans within Vancouver parks.

Yours faithfully,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancouver parks
Date: Tuesday, March 28, 2017 2:12:38 PM

Please continue to prohibit the display and importation of cetaceans within Vancouver parks.
Let's be kind to the wild animals and allow them to stay wild.

Thank you in advance,

Sincerely,

s.22(1)

From: s.22(1)
To: [rk Board](#)
Subject: Vancouver Parks
Date: Sunday, March 26, 2017 6:31:35 PM

Dear Commissioners,

Your positive decision that disallows the import of cetaceans and their display in your parks is commendable and admirable! Please stand your ground at these next hearings and make this positive amendment a permanent law!

Again, we appreciate your effort in getting animals protected from lives of abuse where none of their basic needs are ever met!!

We thank you kindly for your work towards animal welfare! It is a huge step in the right direction for those who depend on us for their voices!!!

Kind regards,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Vancovuer Aquarium
Date: Sunday, January 01, 2017 2:08:41 PM

Hello,

I am wondering if and when there may be a decision about whether or not to hold a community-wide referendum on cetaceans in captivity in 2017?

When Tuaq, the first beluga born at the Vancouver Aquarium died in 1977 I was against keeping whales in captivity; actually my inclinations started prior to this date; I was with a close friend on site at the aquarium just after Tuaq was born; he was keeping track of respiratory counts as an SFU undergraduate in biology we stayed all night watching mother and baby. Ever since I have witnessed death after death at our Aquarium and wonder when common sense will prevail?

Best Regards,

s.22(1)

From: [In Defense of Animals](#) on behalf of [sophie clusel](#)
To: [Vancouver Park Board](#)
Subject: Vote to End Vancouver Aquarium's Cetacean Captivity!
Date: Monday, March 13, 2017 11:43:21 PM

Mar 14, 2017

Vancouver Parks Board

As one of In Defense of Animals' 250,000 supporters, I ask you to vote "yes" on the motion before you that will ensure a plebiscite on the captivity of cetaceans in the next Vancouver election, November 18, 2018--but only if, in the interim, there is a simultaneous, enforceable moratorium on the return of beluga whales from the United States, as well as a prohibition on moving beluga whales from Marineland in Ontario or anywhere else, to your city. I feel it is essential that an objective oversight committee be established to fulfill this outcome.

A plebiscite would be nearly two years away and I have no guarantee its wording will prevent more cetaceans from being taken to Vancouver Aquarium. That risks a continuation of the past several years' efforts by Vancouver Aquarium and others to undermine overwhelming public opinion that captivity should end.

Every beluga birth--and many deaths--in the U.S. during the past sixteen years are linked to Vancouver Aquarium belugas. Please understand that because of Vancouver Aquarium's international reach and impact, your vote affects not only cetaceans and people in the great city of Vancouver, but also people like me who feel sorrow, everywhere.

Cetacean bodies and minds evolved over the millennia as adaptations to their ecosystems. It's time to put the experimental ignorance of the past behind us and to recognize there is no tank in the world that can satisfy their innate physical and psychological needs.

Please take all steps necessary to end cetacean captivity at Vancouver Aquarium, and preemptively throughout Vancouver.

Sincerely,

Miss sophie clusel
22 route de la roche
ampuis, AK 69420
(047) 256-1607
lafeesofie@wanadoo.fr

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Well done for doing the honourable thing!!!
Date: Saturday, March 25, 2017 4:43:59 AM

To whom it may concern

It is beyond understanding how the so-called most advanced species on this planet continues to exploit, abuse and exterminate all other species we share it with to no end. Not to mention our blatant disregard of not only the animals themselves but the fact that this planet is their home as much as it is ours. We have become monsters, the greatest enemy of every walking creature on earth. It is time for the human race to take up its responsibility as the guardians of the planet we were meant to be and treat our fellow earth-dwellers with the compassion, respect and dignity they deserve. Animals are not meant to be confined, imprisoned, used for entertainment or exploited in any other way. They are sentient beings that deserve to live a dignified life free of suffering, cruelty, neglect, imprisonment or exploitation for so-called 'entertainment'. It is no less than our responsibility as humans to ensure ALL LIVING CREATURES are honoured in this fashion and to protect and honour them for future generations! As such I was thrilled to hear how the Vancouver Parks Board voted unanimously to draft an amendment that will prohibit the display and importation of cetaceans within Vancouver Parks. You have done a wonderful thing to respect and honour the creatures with whom we share this planet. THANK YOU!!!

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#)
Subject: Well Done on the Cetacean Ban at Vancouver Aquarium
Date: Wednesday, March 29, 2017 2:25:15 AM

Dear Members,

It was great news for the Animal Kingdom and cetaceans in particular when a decision was made that they could no longer be kept in captivity in Vancouver Aquarium. I know you are preparing the Bill now and wish you all the best with drafting same. Remember animals matter. They have feelings and rights like you and I. If you could ban the slaughter of seals too, you would make a lot of seals and people happy! Keep up the good work!

Regards,

s.22(1)

From: s.22(1)
To: [Vancouver Park Board](#); [PB Commissioners](#); [Coupar, John](#); [Crawford, Casey](#); [Evans, Catherine](#); [Mackinnon, Stuart](#); [Shum, Erin](#); [Wiebe, Michael](#); [Kirby-Yung, Sarah](#)
Subject: Whales and dolphins
Date: Monday, March 27, 2017 4:43:55 PM

Dear Commissioners

On behalf of our membership I would like to congratulate you for making the right decision to keep Vancouver free of captive dolphins and whales. We look forward to hearing that the amendment has been officially passed.

You've done a great service to our fellow ocean travellers. Thank you!

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Cc: vanagua.org@invalid.domain
Subject: Whales and the Aquarium
Date: Wednesday, March 08, 2017 9:19:39 AM

I am a resident of the City of Vancouver and have ocean kayaked for decades. My kayaking adventures have taken me three times to the east coast of Vancouver Island, and in particular Telegraph Cove and Robson Bight. During those trips, I have seen many orca pods in the wild, and during my trip last August, I was treated to an extraordinary display of breaching humpback whales.

Although one might think this would make me opposed to the retention of whales in captivity at the Aquarium, it has had the opposite effect. That is because I know that the only people who will have the opportunity to see whales in the wild, as I have done, are the well to do who can afford an expensive whale watching expedition, or people like myself who have the outdoorsman skills to undertake this on their own, and the luxury of the time to travel to a remote location to see whales in the wild. I wonder how many of the commissioners have ever done that? The reality is most ordinary folk and their kids will never have those opportunities.

When I voted in the past civic election for parks board, I chose to vote for the NPA slate, knowing that Vision and the Greens were opposed to retaining whales in captivity. I instead voted for allowing that that practice to continue, in the interest of providing city dwellers and their children with the opportunity to educate themselves about these magnificent creatures, perhaps igniting their interests to learn more about marine mammals, and maybe even encouraging them to do as I have done -- to travel to the whales natural habitat to see them in the wild.

I do not have a problem retaining a few in captivity to serve those laudable goals.

I believe the majority of the citizens of Vancouver are with me on this side of the issue. Regrettably majorities often remain silent, and their failure to speak up leaves the loudest voices heard being those of the minority -- here the animal rights activists. Surely the fact that the Aquarium continues to draw record numbers of visitors is evidence of the public support it has for the choices it has made.

As a final word I should add that I am not a fan of governing by referendum. That approach is inconsistent with our grand traditions of parliamentary democracy. We elect representatives to make decisions on our behalf, not to turn back to the electorate at the time of difficult decision making. In my view the latter only represents an abandonment of your responsibility as elected officials.

Thank you.

s.22(1)



Sent from my iPad

From: s.22(1)
To: [PB Commissioners](#)
Subject: Whales at the Vancouver Aquarium
Date: Tuesday, March 14, 2017 11:10:36 AM

Dear Park Board Commissioners,

I am writing in favor of the ban on the captivity of whales and dolphins at the Vancouver Aquarium. I am a former volunteer of the Aquarium and would like to share my insight based on that experience.

Many of you have children of your own, or act as children advocates in one way or another. I am writing this message also as a mother, connected to all mothers.

Back in 2009, baby Nala was born to Aurora (already a grand-mother at the time). Along with other volunteers and staff members, I spent very long nights propping my eyes open with pencils, counting Nala's nursing sessions (left? right? was there a milk cloud? how many seconds?), poops (brown? yellow? black?), and breaths at the surface back in 2009. More often than not, I ended up bent into a pretzel shape in the small window of the aquarium food service office. The office has a "view" on the underwater of the medical pool where the whales often hung out at night.

I entered the experience with joy, and exited with deep sadness. Today, as a mother, having tracked my own kids' nursing sessions and dirty diapers, I have a really hard time understanding how other parents, especially moms, can support the captivity of mammals in such ridiculously minuscule enclosures. Obviously, most people believe that animals' lives aren't worth much (other than perhaps their pets, and even then). I am grateful that the Park Board commissioners, including those who have in the past affiliated with the aquarium, are now open to considering other points of view. Let's see things from Aurora's perspective for a moment.

Nala's mom, Aurora, was not a rescue: she was captured from the wild in the late 1980s. Imagine for a moment being born and raised in the open sea, and finding yourself in a concrete pool that you can circumnavigate in about 2 minutes (taking your time). All right, everyone made mistakes, the aquarium now has changed its ways and doesn't capture from the wild. Great. Now imagine being housed with a male beluga for a little while, and then giving birth to a daughter (Qila, born long before Nala) in that same concrete pool. Then seeing her have a child of her own (Tiqa) after another "conjugal visit". Aurora knew that Tiqa would never get to roam the wild sea either. Belugas are smart animals and certainly Aurora would have been aware of the absurdity of her life, and of that of her offspring born in captivity. She may even have been able to communicate about it to her daughter. To say nothing of those who died... wait, they all died in the end. Aurora, the original mom, died last.

One may argue in favour of the the aquarium's Marine Mammal Rescue operations, I personally no longer have a clear mind about it. However, the policy of facilitating breeding in captivity is profoundly inhumane. Of course, it means that within a few years there will no longer be belugas on exhibit at the Vancouver Aquarium, impacting the aquarium's business model, space, and above all marketing. Also, researchers will have to get more creative to continue gaining insight about whales. Mind

you, this may be a good thing for science, because there are good chances that the physiology of captive belugas does not so easily transfer to their wild friends. (For comparative purposes, let's remember that our knowledge of a "healthy" human anatomy was really quite off back in the days when only very poor people's bodies were dissected in med schools, up to sometime in the early 20th century. Are we so sure that captive-born belugas behave like their wild counterparts?)

There are aquariums in progressive jurisdictions where captive cetaceans are not allowed. Maui comes to mind. Their facilities are less grandiose, but nevertheless very educational and engaging, and beloved by children of all ages (especially on rainy days!). The Maui one includes excellent interactive displays on whales which are frankly more engaging than watching a depressed beluga eating a bucket of fish and maybe flashing its tail, which was the standard offering at VanAqua until the passing of Qila and Aurora. (For the record, the Maui Ocean Center also releases its bigger specimens - turtles and sharks - back to the wild after a few months. Not great but still better than keeping them forever.)

I have no doubt that this is a difficult issue for the Park Board, and I commend you on doing the right thing as you take steps toward a cetacean ban in Stanley Park. I am confident that you will carefully consider the modalities of the ban so that the Aquarium's more valuable activities, if any, may be preserved.

With regards,

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: Whales in Captivity
Date: Saturday, March 11, 2017 9:56:57 AM

To Whom it May Concern,

Thank you for your decision to no longer keep cetaceans at the Vancouver Aquarium. It was the right decision and I feel now I can visit the aquarium again.

Thank you,

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Whales in captivity at the Vancouver Aquarium
Date: Wednesday, March 08, 2017 3:44:54 PM

I am 100%, firmly against keeping whales, dolphins, otters, beavers, alligators, or seals in captivity. I hope the Vancouver Parks Board does not allow the Vancouver Aquarium to have Beluga whales or dolphins in captivity. I haven't visited the Vancouver Aquarium for many years because of this issue.

s.22(1)



From: s.22(1)
To: [PB Commissioners](#)
Subject: whales in captivity
Date: Wednesday, March 08, 2017 7:41:03 AM

Dear Park Commissioners:

I am writing you to express my serious concerns and objections to the Vancouver Aquariums plans to continue seeking more belugas to have at their facility.

This plan for having more cetaceans in captivity is unacceptable in my view, and I urge you to vote no when it comes to having more whales and dolphins in captivity!

Sincerely,

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: Whales
Date: Tuesday, March 14, 2017 10:43:56 AM

Congratulations on your stand against captivity of whales, long overdue. There are plenty of opportunities to learn about them without confining them, those days are past.

s.22(1)

From: s.22(1)
To: [PB Commissioners](#)
Subject: whales
Date: Friday, March 10, 2017 12:33:41 PM

Thank-you for your very courageous step to end cetacean captivity. This is a major step in recognizing that other sentient beings deserve our care and compassion.
Dianne Schnieders

From: "Michael Wiebe" <becascadian@gmail.com>
To: "Chan, Cheryl" <Cheryl.Chan@vancouver.ca>
Date: 8/14/2017 11:04:27 AM
Subject: Fwd: Phasing out whale and dolphin captivity in Stanley Park

Page 1

Begin forwarded message:

From: s.22(1)
Subject: Re: Phasing out whale and dolphin captivity in Stanley Park
Date: November 18, 2014 at 11:20:55 AM PST
To: Michael Wiebe <becascadian@gmail.com>

Hello Michael,

First I wish to congratulate you on your election. I hope you will find your public service experience worthwhile and productive.

Michael, during the election I circulated your response to my letter, and I encouraged people to vote for you, as you indicated your opposition to cetacean captivity and the breeding of cetaceans in captivity. I hope I understood your disposition on this matter correctly, as I just watched on line your CBC interview from last night, and mostly what I heard was that you thought John Coupar's push to reverse the Vision Board's decision to ban breeding was to fast, too soon. But I did not hear from you a defense of that ban. I hope that was just an omission on your part, and not an indication that you may consider that breeding might be OK.

I would appreciate hearing back from you, as well as perhaps having a coffee sometime so that we can meet in person.

Again congratulations and best wishes,

s.22(1)

On Nov 7, 2014, at 12:17 AM, Michael Wiebe <becascadian@gmail.com> wrote:

Thank your for your letter,

My personal view on this issue is that we need to move away from the dependance on cetaceans at our aquarium. The Green Party of Vancouver has been very vocal in supporting a plebiscite to give the landlords of the Aquarium, the citizens of Vancouver, the right to make this decision.

I was an annual member of the Vancouver Aquarium as a child and was involved in many great educational programs. I also have been to the Monterey Bay Aquarium which is one of the best aquariums on the west coast, which currently has no cetaceans. I agree with the implementation of an independent oversight committee as I do feel the Vancouver Aquarium has lost some of its accountability. As a restaurant owner, I see the Oceanwise program as more of a marketing campaign then a truly education and effective sustainability advocacy program. I would also like to see a focus on local species such salmon, shellfish, crabs and more instead of exotic animals like penguins. I agree that the artificial insemination program needs to stop. I also don't think that the Vancouver Aquarium should be supporting the capture of wild belugas. If elected I will fight to ensure that the Vancouver Aquarium becomes a true leader in sustainable stewardship.

Regards,

Michael Wiebe
Park Board Candidate
Vancouver Green Party

On Tue, Oct 28, 2014 at 9:20 AM s.22(1) <[REDACTED]> wrote:
Dear Park Board Candidate

Should you succeed in being elected as a Park Board Commissioner you will have to deal with the issue of whale and dolphin captivity in the Vancouver Aquarium.

A key question that you will have to repeatedly face is whether or not you accept the fact that whales and dolphins are sentient social beings that, like humans, suffer greatly in captivity. They suffer from the very condition of their confinement. And they suffer whether they were captured from the wild or bred for a lifetime of captivity.

Should you get elected you will be personally responsible for guiding public policies regarding the present and future activities of the Vancouver Aquarium. Will you allow the Aquarium to proceed with its plans to expand its captive cetacean population by importing and breeding more whales and dolphins. Or will you help the Aquarium evolve towards a more humane and sustainable business plan by guiding it towards an eventual phase out of its captive cetacean display program.

The current Park Board has correctly decided to ban the breeding of cetaceans in the Vancouver Aquarium. This is a step in the right direction. But if breeding cetaceans in the Vancouver Aquarium is unjustified then breeding them anywhere else is equally unjustified. The next step is to ban the importation of any whales and dolphins that were bred in captivity or captured from the wild.

This issue concerns many thousands of citizens of Vancouver. According to the latest polls the majority of Vancouverites would like to see a phase-out of cetacean captivity in Stanley Park.

What are your thoughts on this issue? What does your heart and mind tell you? Do you support the phasing-out of whale and dolphin captivity in the Vancouver Aquarium? Your reply will be greatly appreciated and shared with our network.

Thank you for your reply and for your participation in our democratic process.

s.22(1)

--
Regards,

Michael Wiebe
Park Board Candidate
Phone: 604.616.1220
Email: becascadian@gmail.com
Twitter: @VoteWiebe
www.becascadian.com

From: "Michael Wiebe" <becascadian@gmail.com>
To: "Chan, Cheryl" <Cheryl.Chan@vancouver.ca>
Date: 8/14/2017 11:06:02 AM
Subject: Fwd: Protecting Stanly Park and Cetaceans

Begin forwarded message:

From: "Lifeforce" <lifeforcesociety@hotmail.com>
Subject: Fw: Protecting Stanly Park and Cetaceans
Date: October 28, 2014 at 1:40:33 PM PDT
To: "Peter Hamilton" <lifeforcesociety@hotmail.com>

Dear Parks Board Candidate:

The attached education brochure is the first step of the campaign to protect Stanley Park and to stop the captivity of cetaceans at the Vancouver Aquarium

Stanley Park has a diversity of wildlife living in and migrating through. It is continuously threatened by commercial development such as the ongoing Vancouver Aquarium expansions. The proposed expansion would almost double their encroachment on scarce park land. Most of the \$100 million is public tax money that should be spent on protecting wildlife habitats NOT on building and maintaining animal prisons.

More Pools Always Means More Captives! There would be at least 4 more belugas and at least 6 more other dolphins. They will even include beaver who can be seen living freely in the park and river otters who the public voted against putting in a 90s Stanley Park Zoo expansion. That zoo was shut down.

Do you support a Bylaw to phase out cetacean captivity and stopping further encroachment on Stanley Park from the ongoing Aquarium expansions?

For Freedom,

Peter Hamilton
 Lifeforce Founding Director
 (604)649-5258
lifeforcesociety@hotmail.com
www.lifeforcefoundation.org

FYI

Landmark resolution passed this week in California.

Reports are emerging of a landmark resolution passed this week by the San Francisco Board of Supervisors recognising whales' and dolphins' right to freedom from captivity.

According to reports the resolution states that whales and dolphins deserve '*to be free of captivity, and to remain unrestricted in their natural environment*'. The resolution was championed by Commissioner Russell Tenofsky and backed by both San Francisco Supervisor Scott Wiener, Dr Lori Marino and sponsored by Earth Island Institute's International Marine Mammal Project. Please read: http://us.whales.org/blog/philippabrakes/2014/10/san-francisco-recognises-whales-and-dolphins-right-to-freedom?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+wdcs+%28WDC%3A+Fro+m+the+Front+Line%29

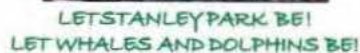
Just recently India instated a total ban on the public display of cetaceans in a landmark ruling. The Indian Ministry of the Environment and

Forests stated in its preamble to the ban:

"Whereas cetaceans in general are highly intelligent and sensitive, and various scientists who have researched dolphin behavior have suggested that their unusually high intelligence, as compared to other animals, means that dolphin should be seen as "non-human persons" and as such should have their own specific rights and [that it] is morally unacceptable to keep them captive for entertainment purpose.

Whereas cetaceans in general do not survive well in captivity, [and] confinement in captivity can seriously compromise the welfare and survival of all types of cetaceans by altering their behaviour and causing extreme distress."

Stanley
Park



Lifescore was formed in 1981 to raise public awareness of the interrelationship of human, animal and environmental issues. We hope to protect precious ecosystems such as Stanley Park for both people and animals to enjoy. The purpose of this brochure is to raise public awareness of the need to protect wildlife and the natural beauty of Stanley Park from the lucrative for-profit zoological industry. We must spend scarce tax monies on protecting ocean habitats NOT dolphin prisons!

During the past several decades individuals and organizations have been struggling to stop private vested interests from commercializing precious parkland and encroaching upon nature. Our park won't continue to survive destructive and haphazard business expansion without your help. We must stop the destruction and privatization of public green space.



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On 2009, the National Highway Traffic Safety Administration (NHTSA) announced that it will be releasing a new set of guidelines for the design and construction of vehicles. The new guidelines will be based on the latest research in vehicle safety and will be designed to reduce the number of deaths and injuries caused by vehicle accidents. The new guidelines will be based on the latest research in vehicle safety and will be designed to reduce the number of deaths and injuries caused by vehicle accidents.

STATISTICS

[illegible][illegible]

• **White elephant** an unwanted item, thing, task, or responsibility that is usually unwanted or avoided by others. *Example: The company's new policy was a white elephant that no one wanted to implement.*

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PROTECTING NATURE

People and organizations worldwide are opposed to the Vancouver Aquarium's destructive expansion plans. The Aquarium claims that there is only a small vocal minority. They call them "activists" equating all those who oppose their plans to imprison up to 16 dolphins and other wildlife as radicals. In fact, they are park and animal protectors. 39 cetaceans have already died as a result of their captivity. However, there are no captive dolphins in many countries such as the UK. In 2006, Mexico banned all imports and exports of primates and dolphins. In 2014 there are 14 countries that have ban cetacean captivity.

STANLEY PARK!

Let's continue the Legacy!



A child with a squirrel as they find a moment of happiness. Nature is all around us. But the Vancouver Aquarium plans include captive beaver, river otters, and others.

Write to: Parks Board Commissioners

pbcomment@city.vancouver.bc.ca

Vancouver Mayor and Council

mayorandcouncil@city.vancouver.bc.ca

Contact Your Federal/Provincial Politicians

The Vancouver Aquarium Expansion would be at least \$100 million and nearly double in size. Bigger pools means up to 8 more belugas and 8 other dolphins imprisoned! Support Vancouver Mayor Roberts, Councillors, and Commissioners who want to phase out the captivity of cetaceans through an improved Cetacean Bylaw.

GET INVOLVED, JOIN LIFEFORCE!

For information:

Lifeforce 604-649-5258

Box 3117, Vancouver, BC, V6B 3X6

Email: lifeforcesociety@hotmail.com

Web: lifeforcefoundation.org

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From: "Michael Wiebe" <becascadian@gmail.com>
To: "Chan, Cheryl" <Cheryl.Chan@vancouver.ca>
Date: 8/14/2017 11:12:33 AM
Subject: Fwd: Thank you for your registration

Hi Cheryl,

Had a great tour with the Marine Mammal Centre's lead doctor on site and got to have a chat with Dr Haulena at the end.

Regards,

Michael Wiebe
Park Board Chair

Begin forwarded message:

From: "Vancouver Aquarium" <special.events@vanaqua.org>
Subject: Thank you for your registration
Date: July 22, 2015 at 4:22:04 PM PDT
To: "Michael Wiebe" <Becascadian@gmail.com>
Reply-To: special.events@vanaqua.org



Dear Mr. Michael Wiebe,

Event Information

Thank you for registering for the Marine Mammal Rescue Centre Celebration taking place on Wednesday, August 19 from 12:30 PM to 5:30 PM. This is a drop-in style event.

In our efforts to create a "zero waste" event, paper tickets will not be issued. You simply need to provide your name and the name of your guest at registration upon arrival.

Please note: Due to animal safety and quarantine issues, you cannot visit the Vancouver Aquarium after the event. The following morning is the earliest you may visit. i.e. If you visit the Rescue Centre on Aug 20, you may not attend the Aquarium's After Hours event taking place later that evening.

Directions

To get to the Rescue Centre:

- 1 Drive north on Main Street. At the north end you will go up and around an overpass.
- 2 At the bottom there is a stop sign. This is Waterfront Road. Turn left.
- 3 You will go under the Main Street overpass. Immediately after, turn left out onto the Main Street Dock.
- 4 We are at the end of the dock within green screened fencing. Park on the south side of the fence and enter the gate on the west side.

**Guest Names**

Please verify that your attendee name(s) are recorded properly below to ensure a fast and smooth entry to the event. Please reply to this email with any changes.

Wednesday, August 19 from 12:30 PM to 5:30 PM
Michael Wiebe

Sienna

If you have any questions, please feel free to call: 604.659.3473 or email:

special.events@vanaqua.org

We look forward to seeing you at the event!

Thank you,

John Nightingale, Ph. D
President & CEO

The Vancouver Aquarium is a non-profit society dedicated to the conservation of aquatic life.



P.O. Box 3232, Vancouver, British Columbia
Canada V6B 3X8 | © Vancouver Aquarium
[Privacy Policy](#) | [Email Preferences](#)

From: "Michael Wiebe" <becascadian@gmail.com>
To: "Chan, Cheryl" <Cheryl.Chan@vancouver.ca>
Date: 8/14/2017 11:07:53 AM
Subject: Fwd: Vancouver Aquarium
Attachments: VanAquaMap.pdf

Begin forwarded message:

From: Charlene Chiang <Charlene.Chiang@vanaqua.org>
Subject: RE: Vancouver Aquarium
Date: March 2, 2017 at 11:47:34 AM PST
To: 'Michael Wiebe' <becascadian@gmail.com>

Hi there,

We look forward to having you. Please ask for me at Aquaquest reception – map attached.

Cheers,
Charlene

Charlene Chiang
Vice President, Engagement
Vancouver Aquarium Marine Science Centre
Charlene.Chiang@vanaqua.org
d. 604 659 3453
c. 604 805 1786



The Vancouver Aquarium Marine Science Centre is a non-profit society dedicated to the conservation of aquatic life. www.vanaqua.org

From: Michael Wiebe [<mailto:becascadian@gmail.com>]
Sent: Thursday, March 2, 2017 10:03 AM
To: Charlene Chiang <Charlene.Chiang@vanaqua.org>
Subject: Re: Vancouver Aquarium

Hi Charlene,

Thanks for the confirmation and I look forward to my visit today at 2pm.

Regards,

Michael Wiebe
Park Board Chair

On Mar 1, 2017, at 10:45 AM, Charlene Chiang <Charlene.Chiang@vanaqua.org> wrote:

Hi Michael,

Just a friendly follow up to see if you are confirmed for 2 pm tomorrow?

Warm regards,
Charlene

Charlene Chiang
Vice President, Engagement
Vancouver Aquarium Marine Science Centre
Charlene.Chiang@vanaqua.org

d. 604 659 3453

c. 604 805 1786

<image001.jpg>

The Vancouver Aquarium Marine Science Centre is a non-profit society dedicated to the conservation of aquatic life. www.vanaqua.org

From: Michael Wiebe [<mailto:becascadian@gmail.com>]

Sent: Tuesday, February 28, 2017 1:58 PM

To: Charlene Chiang <Charlene.Chiang@vanaqua.org>

Subject: Re: Vancouver Aquarium

Hi Charlene,

Would we be able to make it closer to 2?

Cheers,

Michael Wiebe
Park Board Chair

Sent from my iPhone

On Feb 28, 2017, at 8:12 AM, Charlene Chiang <Charlene.Chiang@vanaqua.org> wrote:

Hi Michael,

Our team could do Thursday at 1 pm if that works for you?

Thanks,
Charlene

Charlene Chiang
Vice President, Engagement
Vancouver Aquarium Marine Science Centre
Charlene.Chiang@vanaqua.org

d. 604 659 3453

c. 604 805 1786

<image001.jpg>

The Vancouver Aquarium Marine Science Centre is a non-profit society dedicated to the conservation of aquatic life. www.vanaqua.org

From: Michael Wiebe [<mailto:becascadian@gmail.com>]

Sent: Monday, February 27, 2017 11:17 PM

To: Charlene Chiang <Charlene.Chiang@vanaqua.org>

Subject: Re: Vancouver Aquarium

Hi Charlene,

Do you have any time on Thursday to meet up?

Cheers,

Michael Wiebe
Park Board Chair

On Feb 24, 2017, at 8:45 AM, Charlene Chiang <Charlene.Chiang@vanaqua.org> wrote:

Hi Michael,

Would next Weds, March 1 at 2 pm work on your end at Vancouver Aquarium?

Warm regards,
Charlene

Charlene Chiang
Vice President, Engagement
Vancouver Aquarium Marine Science Centre
Charlene.Chiang@vanaqua.org
d. 604 659 3453
c. 604 805 1786

<image001.jpg>

The Vancouver Aquarium Marine Science Centre is a non-profit society dedicated to the conservation of aquatic life. www.vanaqua.org

From: Michael Wiebe [<mailto:becascadian@gmail.com>]
Sent: Thursday, February 23, 2017 9:02 PM
To: Charlene Chiang <Charlene.Chiang@vanaqua.org>
Subject: Re: Vancouver Aquarium

Hi Charlene,

I am still available tomorrow morning or later next week as Monday doesn't work for me. Let me know what other times and dates work for you.

Regards,

Michael Wiebe
Park Board Chair

On Feb 22, 2017, at 2:52 PM, Charlene Chiang <Charlene.Chiang@vanaqua.org> wrote:

Hi Michael,

Your colleague, Erin Shum, suggested that I reach out to you as the two of you have spoken about learning more about the work we lead.

We'd like to welcome you to Vancouver Aquarium for a tour and discussion about our work in ocean conservation at Vancouver Aquarium.

This Friday morning would work on our end if it works for you? Alternatively, Monday at 3:30 pm could also work.

We look forward to meeting with you.

Warmest regards,
Charlene

Charlene Chiang
Vice President, Engagement
Vancouver Aquarium Marine Science Centre
Charlene.Chiang@vanaqua.org
d. 604 659 3453
c. 604 805 1786

<image001.jpg>

The Vancouver Aquarium Marine Science Centre is a non-profit society dedicated to the conservation of aquatic life.
www.vanaqua.org

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We enjoy talking to you – If you do not wish to receive further information from us (where applicable), please email PRIVACY@VANAQUA.ORG or write to our policy officer at Vancouver Aquarium, PO Box 3232 Vancouver, BC V6B 3X8
For more information about our privacy or anti-spam policies, please visit www.vanaqua.org

Vancouver Aquarium Arrival Map

