

# A CRUMBLING CASE FOR CETACEAN CAPTIVITY?

A review of several key education  
and conservation research factors



Vancouver Humane Society and Zoocheck

November, 2016

## TABLE OF CONTENTS

<b>INTRODUCTION</b>	<b>2-3</b>
<b>RESEARCH: PRELIMINARY ANALYSIS AND COMMENTARY</b>	<b>4</b>
<b>Method</b>	<b>5</b>
<b>Peer-Reviewed Research on Captive Cetaceans at Vancouver Aquarium</b>	<b>5</b>
<b>Results - Vancouver Aquarium</b>	<b>5-8</b>
<b>Peer-Reviewed Research on Captive Cetaceans at Marineland</b>	<b>8</b>
<b>Results – Marineland</b>	<b>8-10</b>
<b>Discussion</b>	<b>10-11</b>
<b>Conclusion</b>	<b>11-12</b>
<b>EDUCATION: PRELIMINARY ANALYSIS AND COMMENTARY</b>	<b>12</b>
<b>Vancouver Aquarium</b>	<b>13-14</b>
<b>Marineland</b>	<b>14-16</b>
<b>Concluding Comments</b>	<b>16-17</b>
<b>ENDNOTES</b>	<b>18-19</b>
<b>APPENDICES</b>	
<b>Appendix 1 – Selected Reading</b>	<b>i-ii</b>
<b>Appendix 2 – Show Transcripts</b>	<b>iii-xxii</b>

Vancouver Humane Society  
303-8623 Granville Street  
Vancouver, B.C. V6P 5A2  
[www.vancouverhumane.ca](http://www.vancouverhumane.ca)  
604-266-9744

Zoocheck Inc.  
788 1/2 O'Connor Drive  
Toronto, ON M4B 2S6  
[www.zoocheck.com](http://www.zoocheck.com)  
416-285-1744

VHS & Zoocheck gratefully acknowledge the support of the **Animal Welfare Foundation of Canada**



## 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.<sup>1</sup> 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.<sup>ii</sup>

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.<sup>iii</sup> 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.<sup>iv</sup> 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.<sup>v</sup>

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?<sup>vi</sup> 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 O<sup>2</sup> 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](http://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<sup>vii</sup> 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<sup>viii</sup>) 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.<sup>ix</sup> 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)<sup>x</sup>, 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.<sup>xi</sup>

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.<sup>xii</sup> 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.<sup>xiii</sup> As well, both facilities are accredited by Canada’s Accredited Zoos and Aquariums (CAZA)<sup>xiv</sup> 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.<sup>xv</sup>*

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.<sup>xvi</sup>*

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.<sup>xvii</sup>*

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.<sup>xviii</sup>*

## **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.<sup>xix</sup>

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.<sup>xx</sup> 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.<sup>xxi</sup>

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*<sup>xxii</sup>. 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.<sup>xxiii</sup> 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.<sup>xxiv</sup>

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.”<sup>xxv</sup>

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*<sup>xxvi</sup>.

This statement is incorrect. There are currently thought to be 89 living cetacean species<sup>xxvii</sup>.



*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.*<sup>xxviii</sup>

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).*<sup>xxix</sup>

Another investigation indicated that belugas regularly dove to depths between 20 – 300+ meters,<sup>xxx</sup> 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.*<sup>xxxi</sup>

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.<sup>xxxii</sup> 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

<sup>i</sup> 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)

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

<sup>iii</sup> 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)

<sup>iv</sup> See Appendix 1, selected bibliography.

<sup>v</sup> 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.

<sup>vi</sup> 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.

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

<sup>viii</sup> A list of Vancouver Aquarium research papers and other materials can be found at <https://www.vanaqua.org/act/research/publications>

<sup>ix</sup> 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)

<sup>x</sup> 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).

<sup>xi</sup> 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.

<sup>xii</sup> 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.”

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

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

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

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

<sup>xvii</sup> 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

<sup>xviii</sup> 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

<sup>xix</sup> 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.

<sup>xx</sup> 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)

<sup>xxi</sup> Ibid.

<sup>xxii</sup> 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).

<sup>xxiii</sup> 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.

- <sup>xxiv</sup> See [www.savethewhales.org](http://www.savethewhales.org); [uk.whales.org](http://uk.whales.org); [www.marinemammalcenter.org](http://www.marinemammalcenter.org); [www.mmsc.org](http://www.mmsc.org); [www.marinemammalscience.org](http://www.marinemammalscience.org); [www.acsonline.org](http://www.acsonline.org); [www.nmfs.noaa.gov/pr/species/mammals](http://www.nmfs.noaa.gov/pr/species/mammals)
- <sup>xxv</sup> Rose, N., R. Farinato & S. Sherwin, *The Case Against Marine Mammals in Captivity*, 3<sup>rd</sup> Edition, Humane Society of the United States & World Society for the Protection of Animals, USA (2006)
- <sup>xxvi</sup> Marineland, Cetaceans, Accessed at <http://www.marinelandcanada.com/education/marinemammals/cetaceans>, October 1, 2016
- <sup>xxvii</sup> Whale and Dolphin Conservation, Introduction to WDC Species Guide, Accessed at <http://uk.whales.org/issues/introduction-to-wdc-species-guide>, October 1, 2016
- <sup>xxviii</sup> 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
- <sup>xxix</sup> 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
- <sup>xxx</sup> Martin, A. R., and T. 6. Smith, Deep diving in wild, free-ranging beluga whales, *Delphinapterus leucas*, Can. J. Fish. Aquat. Sci. 49: 462-466 (1992).
- <sup>xxxi</sup> Marineland, Killer Whales, Accessed at <http://www.marinelandcanada.com/education/marinemammals/killerwhales>, October 1, 2016
- <sup>xxxii</sup> 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**  
**SELECTED READING**

Bekoff, M, Aquatic animals, cognitive ethology, and ethics: questions about sentience and other troubling issues that lurk in turbid water, *DISEASES OF AQUATIC ORGANISMS*, Dis Aquat Org, Vol. 75: 87–98 (2007)

Davis, S G, *Spectacular Nature, Corporate Culture and the Sea World Experience*, University of California Press, USA (1997)

Forhoff, T & B Peterson (eds.), *Between Species, Celebrating the Dolphin-Human Bond*, Sierra Club Books, USA (2003)

Hancocks, D, *A Different Nature, The Paradoxical World of Zoos and Their Uncertain Future*, University of California Press, USA (2001)

Jett, J S & J M Ventre, *Keto and Tillicum Express the Stress of Orca Captivity*, Orca Project, USA (2011)

Kirby, D, *Death at Sea World, Shamu and the Dark Side of Killer Whales in Captivity*, St. Martins Press, USA (2012)

Laidlaw, R, *Looking at Fragments of Nature: Perspectives on Zoo and Aquarium Captivity*, in Sorenson, J. (ed.) *Critical Animal Studies, Thinking the Unthinkable*, Canadian Scholar's Press, Canada (2014)

Malamud, R, *Reading Zoos, Representations of Animals and Captivity*, New York University Press, USA (1998)

Marino, L, *Cetacean Captivity*, in Grun, L. (ed.) *The Ethics of Captivity*, Oxford University Press, USA (2014)

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).

Mayer, S, *A Review of the Scientific Justification for Maintaining Cetaceans in Captivity*, Whale and Dolphin Conservation Society, UK (1998)

NOAA Fisheries, *Georgia Aquarium Application to Import 18 Beluga Whales (File No. 17324)* (2015) [http://www.nmfs.noaa.gov/pr/permits/georgia\\_aquarium\\_belugas.htm](http://www.nmfs.noaa.gov/pr/permits/georgia_aquarium_belugas.htm)

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](http://www.nmfs.noaa.gov/pr/permits/ga_court_decision_092815.pdf)

Perrin, W F, Bernd Wursig & J.G.M. Thewissen (eds.), Encyclopedia of Marine Mammals, Second Edition, Academic Press (2009)

Rose, N A, The well-being of captive marine mammals: concerns and conflicts. in G.M. Burghardt, J.T. Bielitzki, J.R. Boyce, and D.O. Schaeffer (eds.), Proceedings of the Well-Being of Animals in Zoo and Aquarium Sponsored Research, Scientists Center for Animal Welfare, USA (1996)

Rose, N A, R Farinato & S Sherwin, The Case Against Marine Mammals in Captivity, 3<sup>rd</sup>. Edition, Humane Society of the United States & World Society for the Protection of Animals, USA (2006)

Rose, N A, Animal Welfare Institute APHIS Proposed Marine Mammal Rules Comments (2016)  
<https://www.zoocheck.com/wp-content/uploads/2015/04/AWI-APHIS-proposed-rule-comments-FINAL-03May16.pdf>

Sidiqui, S, Cetaceans in captivity: The education fallacy and the modern ark's voyage to apathetic attitudes concerning the conservation of wild cetaceans (Thesis) (2011)  
<http://www.indiana.edu/~uscholar/pdfs/sp2011.pdf>

Warkentin, T & L Fawcett, Whale and Human Agency in World-Making: Decolonizing Whale-Human Encounters, in Acampora, R (ed.) Metamorphoses of the Zoo, Animal Encounters after Noah, Lexington Books, USA (2010)

**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 Keela joined today by trainer Troy.

And they are a fantastic duo because Aurora is in fact the mother of Keela and Keela 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 Keela, 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 Keela 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 Keela 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 Keela 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 Keela 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, Keela'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 Keela 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 Keela 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 Keela 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 Keela.

Keela 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 21<sup>st</sup> 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 here 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 Keela 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 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 Keela 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 Keela 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](http://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 aeriels 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. 27<sup>th</sup>

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. 27<sup>th</sup>

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.

---