



October 29, 2012

Mr. Michael Payne
Permits and Documentation Division Chief
Office of Protected Resources
National Oceanic and Atmospheric Administration
United States Department of Commerce
Silver Spring Metro Center 3
1315 East-West Highway, Room 13822
Silver Spring, MD 20910

RE: File No. 17324

Dear Mike:

Georgia Aquarium is pleased to submit comments that respond, in part, to public comments regarding Georgia Aquarium's application for a Marine Mammal Protection Act permit to import 18 beluga whales from Russia. The response to the public comments is attached as Exhibit 1. However, Exhibit 1 focuses only on those comments submitted to the National Marine Fisheries Service ("NMFS") as of 12:00 a.m. on October 25, 2012. Georgia Aquarium recognizes that NMFS has not yet posted all filed comments and also that many people will be filing comments today. Therefore, Georgia Aquarium will submit a further response to public comments filed on and after October 25, 2012. Georgia Aquarium will submit these supplemental responses as soon as possible after the newly filed public comments are made available by NMFS.

Also attached to this letter as Exhibits 2 through 14 are written versions of the oral testimony presented at the October 12, 2012 public hearing by individuals supporting the permit application. In a few cases, Exhibits 2 through 14 expand on the oral testimony. The expansion represents the full statement the witness planned to present on October 12 but which was edited to a shorter version based on the time limits NMFS imposed in light of the large number of expected speakers.

Finally, attached to this letter are Exhibits 15-17 that respond to questions from NMFS requesting more information about the collection methodology used by the Russian collectors and about the transport plan. Exhibit 15 is comprised of additional pictures of the collection methodology. Exhibit 16 is a computer-generated video of the collection based on these pictures. Exhibit 17 is a transportation alternative analysis that responds to your questions about the proposed transport by describing the transportation alternatives considered by Georgia Aquarium. Among those options are alternatives that can reduce total transport time. Georgia

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Aquarium is prepared to adopt and implement that option if the permit is approved for a sufficient period of time for Georgia Aquarium to enter into the multiple contracts necessary to secure the requisite aircraft. In addition, as soon as the renewed CITES export permits are received, we will transmit them to you.

If you have any questions about the contents of this letter or on any other matter, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "William C. Hurley IV". The signature is fluid and cursive, with a prominent initial "W" and "H".

William C. Hurley IV

Enclosures

EXHIBIT 1



COMMENTS ON THE PERMIT APPLICATION

I. General

A. **Comment.** A majority of Americans believe public display is wrong because animals should not be in captivity.

Response. The Marine Mammal Protection Act (“MMPA”) specifically authorizes public display. *See* 16 U.S.C. §§1371(a)(1) and 1374. Individuals opposed to public display should direct their comments to Congress, not NMFS, with respect to this permit application. Moreover, the vast majority of Americans support the public display of marine mammals. In a 2011 Harris Interactive® poll released by the Alliance of Marine Mammal Parks and Aquariums (“AMMPA”), 97% of those surveyed agreed that marine life parks, aquariums, and zoos play an important role in educating the public about marine mammals. In addition, 96% agreed that marine life parks, aquariums, and zoos provide people with valuable information about the importance of oceans, waters, and the animals that live there. Attached as Appendix A is a copy of the Harris poll.

B. **Comment.** 70% of Americans now believe that having marine mammals in captivity is totally morally wrong.

Response. As noted above, the MMPA specifically authorizes public display and the Harris poll demonstrates the public supports public display. The commenter appears to be incorrectly referring to the results of a push-pull poll released by the Humane Society of the United States, the Whale and Dolphin Conservation Society and the Animal Welfare Institute in July 2012. The specific question and results which most closely align with this comment and the percentage quoted are as follows: *“Suppose zoos, aquariums and marine mammal theme parks in the United States that currently keep killer whales were to STOP keeping killer whales in captivity. Would that make you...?”* 71% responded that it *“...would make no difference in my decision to visit, because other things matter more.”* There is no basis to believe these respondents had any moral bias toward not having marine mammals in human care. Moreover, the poll in question used a technique known as “push polling,” or posing questions that advocate a particular point of view in order to influence the responses of the poll participants. Even in the face of these tactics, the poll results were that 67% of the respondents believed “there is educational value for people in being able to see these animals up close and hear a professional talk about them,” 63% believed that “it benefits science and our understanding of ...whales to study them” in parks and aquariums, and 59% believed that “seeing ... whales in zoos, aquariums and marine mammal theme parks helps people make a connection so that they want to protect them in the wild.” These results confirm that the clear majority of respondents understand and support the education and conservation missions of zoological parks and aquariums. Consider this in conjunction with the results of a 2011 Harris Interactive® poll of more than 1,000 adults, discussed above, which found that 97% of people agree that marine life parks, aquariums, and zoos are important because they educate children about marine mammals – animals that children might not be able to see in the wild.

C. **Comment.** The import is driven by the desire of aquariums to increase profits through swim programs and gate collections.

Response. Opponents of public display erroneously claim these animals are displayed for economic gain. In reality, animals such as those at Georgia Aquarium, a 501(c)(3) not-for-profit organization, are receiving the highest quality care from highly skilled veterinary and animal care experts. Having these animals in human care is providing scientific insights to benefit the conservation of belugas globally. Equally important, the display of these animals is reaching millions of people – who would not otherwise know about these animals – with a strong conservation message. The belugas that will be acquired and imported from Russia, if this permit is issued, will only further these positive impacts. Moreover, as noted above, Congress has specifically authorized the public display of marine mammals without regard to whether the displaying facility is a profit or non-profit entity.

D. **Comment.** Several states and nations have outlawed keeping belugas and other animals in captivity.

Response. As noted above, the MMPA specifically authorizes public display. Any statutory or regulatory action taken by an individual state or another country does not constitute an amendment to the MMPA.

E. **Comment.** This import will be a precedent allowing more captures/imports.

Response. Because the MMPA authorizes public display and the import of animals for that purpose, any person meeting the statutory standards may apply for an import permit. Each such application is considered individually to determine if it meets the applicable legal standards. Thus, one application is not precedent for a different later-filed application.

F. **Comment.** Georgia Aquarium is circumventing the law by obtaining whales from Russia.

Response. The MMPA allows the importation of marine mammals for public display. A person applying for a permit to import marine mammals is not circumventing the law by seeking permission to do what the law allows. The import will be conducted in full compliance with the laws of the United States and the Russian Federation.

G. **Comment.** The permit application references an American Zoo Association (“AZA”) Species Survival Plan® (“SSP”). There is no such document. Nor is there an AZA Breeding and Transfer Plan which is required for a breeding program to be designated an SSP. Further, for there to be an SSP, the captive population must number at least 50 animals.

Response: The AZA SSP is not a “document,” it is a comprehensive animal management program. The mission of an AZA SSP Program is to cooperatively manage specific, and typically threatened or endangered, species populations within AZA-accredited Zoos and Aquariums, Certified Related Facilities, and Approved Non-Member Participants. There are currently more than 300 SSP Programs, each managed by their corresponding Taxon Advisory Groups, within AZA. Each is responsible for developing a comprehensive population

Studbook and a Breeding and Transfer Plan which identifies population management goals and recommendations to ensure the sustainability of a healthy, genetically diverse, and demographically varied population. The Taxon Advisory Groups which manage the SSP Programs collaborate with the Population Management Center (“PMC”), Wildlife Contraception Center (“WCC”), Program Leaders, and Institutional Representatives from each participating institution to develop an SSP Breeding and Transfer Plan for the species in question. Each Breeding and Transfer Plan summarizes the current demographic and genetic status of the population and identifies breeding or non-breeding recommendations with consideration given to each animal’s social and biological needs as well as transfer feasibility. All recommendations are designed to maintain or increase a healthy, genetically diverse, and demographically stable population. The beluga whale SSP that was quoted in the permit accurately classified the beluga whale animal program as an AZA SSP at that time. However, AZA recently incorporated several new animal program management changes which resulted in the reclassification of many such programs. Under these changes, there are an insufficient number of animals in the beluga population to meet the minimum requirement to qualify as an SSP. Therefore, the beluga whale breeding cooperative is currently classified as an AZA Studbook Program. However, according to AZA, it is likely that the addition to the managed population of the animals described in the permit application, and the genetic diversity they represent, would cause this program to be again be reclassified as an SSP.

H. **Comment.** The price of belugas is \$600,000 per animal which encourages their collection.

Response. The cost for the acquisition of the beluga whales is confidential, proprietary information. Further, the cost of the whales is not a relevant legal issue before the agency. All of that said, the accusation is completely false.

I. **Comment.** The MMPA prohibits the import of cetaceans.

Response. The MMPA does not prohibit the import of cetaceans.

J. **Comment.** Georgia Aquarium is selling some of the belugas that would be imported.

Response. This comment is incorrect. All of the beluga whales to be imported will be owned by Georgia Aquarium. Some of the whales will be transferred to other public display facilities pursuant to breeding loan agreements so that the beluga whale population at accredited North American facilities may be managed appropriately for social grouping, breeding, and related purposes.

K. **Comment.** If Georgia Aquarium is requesting a permit to import eighteen beluga whales in one transfer, the permit should not cover a period of five years, as has been requested by the Aquarium.

Response. There is nothing unusual about the five year period referred to in the comment. Five years is the typical duration for MMPA permits. In this case, a permit of extended duration allows the applicant sufficient time to make and implement the transport

arrangements, which include chartering aircraft which are currently under contract for other uses and other considerations.

L. **Comment.** It appears the permit application is structured to eliminate the need for all the oceanaria to apply for a permit and submit to the scrutiny of agencies tasked with overseeing this activity and the public, circumventing the process of assuring the issuance of all such permits are necessary, proper, and in the best interest of the public.

Response. Georgia Aquarium has followed all the requirements set forth in the MMPA. The accusation that Georgia Aquarium is “circumventing” any aspect of this process is without merit. Any future MMPA permit application will also be judged pursuant to the applicable MMPA standards.

M. **Comment.** Georgia Aquarium is asking NMFS to approve a permit that will benefit a small number of Americans. The aquarium failed to provide information breaking down the percentage of patrons from outside the USA from the total number of its patrons listed in the permit application. The Office of Protected Services should understand how many Americans are served as a consideration for the issuance of this permit.

Response. More than two million people visit Georgia Aquarium each year. The national origin of visitors to Georgia Aquarium is not an applicable legal standard under the MMPA and the statute does not require public display facilities to provide information regarding the number of guests who visit from outside of the U.S. as a consideration for issuance of a permit.

II. Research Programs

A. **Comment.** Research on animals in public display facilities does not benefit animals in the wild.

Response. As indicated in the comments by Dr. Grey Stafford at the October 12, 2012 NMFS hearing, and his further comments submitted to the agency, which comments are hereby incorporated by reference, it is well documented in peer-reviewed literature that there is a tremendous amount of data which has been gathered due to the support of public display facilities. *See, e.g.*, Ridgway 2008; Dudok van Heel 2009; Evans 2008, attached as Appendices B-D. The reason is simple. Behavioral management using modern positive reinforcement-based methods creates a success-oriented environment of trust between animals and caregivers. It provides a safer, cooperative, and productive means to acquire vital physiological and behavioral data to save species. These data simply cannot be gathered from animals in the wild.

B. **Comment.** There are over 40 belugas in Canada and dozens in the U.S. This is sufficient to conduct whatever research on belugas that may be necessary.

Response. Other than the Vancouver Aquarium, the beluga whale population in Canada is managed separately from the rest of the North American population and is not part of the current cooperative breeding and research programs taking place in the U.S. with beluga whales. With just over 30 whales now in human care in accredited North American facilities, the

zoological community is at a crossroads because the size and the age and sex distribution of the current population means it cannot be sustained without the addition of new animals. If the population cannot become self-sustaining, it will end the public education, research, and development of conservation initiatives involving live animals. For these reasons, it is critical that this import be approved.

C. **Comment.** The principal threat to belugas in the wild is habitat degradation. Research on animals in captivity offers no information that can help address habitat degradation.

Response. Unregulated hunting, climate change, noise, pollution, shipping vessel traffic, industrial activity, disease, and predators are among the factors that have impacted the species in the wild. Additional research through work with animals in human care expands the understanding of these impacts. Through the study of belugas in human care, scientists can gain increased understanding of belugas' biology, physiology, and disease pathogens, and create baseline indicators to better understand issues threatening belugas in their natural habitats. These developments can inform marine mammal policy and allow actions to be taken to preserve the global health of the species.

D. **Comment.** Public display facilities have published very few scientific research papers.

Response. This statement is not based in fact. In just seven years since its founding, Georgia Aquarium staff alone have published or contributed to more than 20 scientific research papers. Additionally, there are at least 1,516 examples of such papers from other institutions, spanning decades, listed on the National Marine Mammal Foundation database found at www.nmmf.org. It is profoundly incorrect to call this copious number of published papers "very few."

E. **Comment.** GAI has failed to demonstrate that several decades of research using animals already in captivity will not be sufficient to learn about belugas to the full extent possible in captive situations.

Response. Advancement in science and learning never ends. While the scientific community has greatly benefited from the data gathered by having belugas in human care, it is incorrect to suggest that academics and public policy makers possess enough understanding of this species to conserve it to the best of our ability.

III. Longevity

A. **Comment.** The percentage of captive cetaceans living long, healthy lives is less than 5% and 70% die within one year.

Response. These percentages have no basis in fact. Cetaceans in human care are known to live as long if not longer than in the wild. For example, a comparison of dolphin life spans in AMMPA member facilities and life spans in the wild based on peer-reviewed, published papers confirms that dolphins in U.S. parks and aquariums live almost twice as long as those in our oceans and bays. The comparative average life spans of wild dolphins and dolphins in human

care have been thoroughly studied, documented, peer reviewed, and published by a number of America's leading marine mammal field biologists and wildlife experts. Moreover, while longevity of beluga whales in human care has yet to be established because the oldest belugas are currently living and are over forty years of age, a recent scientific paper indicates that adult life expectancy of belugas in wild populations is not different from those in human care. *See Willis 2011 in Appendix F of the Georgia Aquarium permit application.*

B. Comment. Research shows that beluga whales born in captivity die within a few months. Captive bred animals do not survive.

Response. This is a blanket statement with no basis in fact. There has been great success in breeding belugas in human care in the U.S. Many beluga whales have been born and lived full lives in human care. Of the current population of beluga whales in accredited North American institutions, more than half were born in human care.

C. Comment. Breeding in captivity causes belugas to die.

Response. This statement is not true. There is no evidence suggesting that beluga whale calves born in human care suffer a higher mortality rate than those in the wild. Nor is there any evidence to suggest a higher mortality for pregnant females. There are many living and thriving beluga whale mothers which have given birth multiple times, as evidenced by the NMFS database.

D. Comment. Georgia Aquarium has had a high beluga mortality rate with the death of four adults and recently a newborn died within a few days of its birth.

Response. There are several factual errors in this statement. Two, not four, adult beluga whales have died at Georgia Aquarium. One of these whales was adopted and brought to Georgia Aquarium after living for years in extremely substandard conditions in Mexico. The animal's health was severely compromised before it arrived at Georgia Aquarium. The animal was given the finest available veterinary care but was ultimately humanely euthanized due to his significant health problems related to the earlier living conditions in Mexico. The age of the other whale was estimated to be approximately 25 years old, which is old for a beluga. The beluga calf which died in May 2012 was the first born to a young female. The calf was very small and unable to swim on her own, conditions often associated with first time pregnancies. Indeed, it is documented that first-time pregnancies in small cetaceans are often unsuccessful. Odds for calf survival increase with each of the mother's consecutive pregnancies. (Wells 2000 attached as Appendix E).

E. Comment. The deaths of four whale sharks are evidence of Georgia Aquarium's record of animal care.

Response. The statement is factually incorrect. Georgia Aquarium has mourned the loss of two whale sharks at its facility, not four. That said, animals die in the wild as well in human care for many of reasons. However, it should be noted that the four resident whale sharks living and thriving at Georgia Aquarium have now been doing so for nearly seven years. Furthermore,

taxonomically speaking, there is no relationship between the care given to large fish and that given to marine mammals.

F. **Comment.** Belugas died at Shedd Aquarium because of inappropriate veterinary care.

Response. The application was submitted solely by Georgia Aquarium. Nevertheless, the accusation is completely false with no evidence to support it.

G. **Comment.** Dolphins commit suicide because of being “confined” at public display facilities.

Response. Suicide is a term used to address humans that intentionally take their own lives. To suggest marine mammals do so is preposterous and scientifically unfounded.

H. **Comment.** According to ceta-base.com, SeaWorld has lost 17 belugas at San Diego, 16 at San Antonio, and 7 at Texas, most of them collected from the wild. SeaWorld also had a four-year-old beluga born in captivity die from ingesting a lead weight.

Response. Ceta-base is not a regulatory agency website. Public display opponents often tally lists of animal deaths that span decades in an attempt to create alarm over the care an institution gives its animals. This would seem to suggest that opponents of public display believe animals in human care should live forever. Living things die in the wild and in human care. There is no credible scientific evidence to suggest that belugas in human care die at a faster rate or live shorter lives than those in the wild. Indeed, the scientific analysis prepared by Kevin Willis, attached in Appendix F of the Georgia Aquarium permit application, documents that longevity rates for belugas in the wild and in human care is comparable.

I. **Comment.** At Vancouver Aquarium, 14 belugas have been exhibited since 1967 and seven died within three years of being born or wild caught.

Response. Forty-five years have passed since 1967. In those four and one-half decades, it would be unreasonable to expect that any marine life park or aquarium would not experience the loss of some animals. Furthermore, this comment is not relevant for consideration for this import permit.

J. **Comment.** Belugas in the wild live a maximum of 50-60 years based on tooth ring analysis. Belugas in captivity rarely live beyond 30, frequently do not pass 25, and none have lived to the possible maximum age. The permit application does not contradict this, instead relying on a comparison of median and average ages at death.

Response. Maximum age is a demonstration of possible longevity and is, by definition, not representative of an entire population. For example, the known potential for human longevity is currently 122 years. However, there is only one known human who has reached this age. The oldest living belugas in zoological parks and aquariums are currently over 40 years of age and, thus, the maximum longevity for this species is undetermined. However, using data from published studies and adjusting results to conform to the one growth layer group per year

deposition rate, it was determined that the adult life expectancy of beluga whales in human care is not different than that of beluga populations in wild. *See Willis 2011 attached in Appendix F of the Georgia Aquarium permit application.*

K. **Comment.** Belugas in captivity live shorter lives than belugas in the wild. Because belugas in captivity have no predators, anthropogenic hazards, or food shortages, it must be captivity that kills them prematurely.

Response. As noted above, the life spans of belugas in human care and in the wild are comparable.

L. **Comment.** Belugas in public display facilities should live longer than belugas in the wild because captive belugas do not experience the same challenges as belugas in the wild regarding finding food, etc. The reason belugas in captivity do not live longer than their wild counterparts is because of chronic stress.

Response. Beluga whales in human care live at least as long as their wild counterparts (Willis 2011). Simply put, there is no scientific basis to suggest beluga whales should live longer in human care. Moreover, the accusation that animals in human care experience stress greater than their wild counterparts is completely false. Wild animals live daily with many challenges to their survival. Predators, hunger, noise, parasites, and environmental pollution are just a few of the challenges animals in the wild must contend with every day. Animals at Georgia Aquarium and other accredited U.S. facilities live without the stress of these considerable daily challenges. Some marine mammal studies indicate that animals cared for in accredited facilities may be healthier than free-ranging cetaceans (Bossart 2007 and Bossart 2011, attached as Appendices F and G). It should also be noted that the U.S. government reports it “is unaware of any valid scientific research or other information that documents or supports that [shows or] performances...cause additional unnecessary stress for the animals.” U.S. Department of Agriculture Swim-With-the-Dolphin Programs Final Rule, 63 Fed. Reg. 47,128 (Sept. 4, 1998).

M. **Comment.** Of the 71 belugas that have lived in captivity, 34 have died.

Response. This statement implies an expectation that belugas in human care should live forever. Living things eventually die. There is no credible scientific evidence to suggest that animals in human care die at a faster rate, or live shorter lives, than those in the wild. As noted above, the life span of belugas in the wild and in human care are comparable.

IV. Animal Care at Public Display Facilities

A. **Comment.** Belugas are susceptible to mosquito viruses and other diseases in captivity because they are unable to dive deep enough to drive them off.

Response. This accusation is unfounded. There is no known published report or instance either in the wild or in human care where a beluga whale has contracted any sort of mosquito-borne virus.

B. **Comment.** Whales “see” by releasing sounds and listening for the echo. Placing whales in a pool essentially blinds these animals and causes other problems because the sound echo is too loud, much like a loud stereo in a small room.

Response. There is no credible research suggesting this statement is true. Numerous studies conducted over 40 years prove that dolphins and whales know exactly how to compensate for their environment, using their sonar only when they choose to do so. *See*, for example, Akamatsu 1998 attached herein as Appedix J. This adaptation is also documented in the book “The Sonar of Dolphins,” by W.W.L. Au, Springer-Verlag 1993.

C. **Comment.** Georgia Aquarium is a “very noisy” facility and that is injurious to belugas.

Response. There is no evidence to suggest that noise levels maintained at Georgia Aquarium have any impact on the belugas in the Aquarium. The health and well-being of animals in our care is the number one priority. Because of this, the Aquarium “mapped” its beluga habitats acoustically and set a maximum decibel level for ambient noise. This decibel level is continuously monitored using sophisticated digital technologies, and has been quantified by third party scientists as safe for cetaceans (Scheifele 2012 attached as Appendix H).

D. **Comment.** Belugas die or are injured because they “bash” themselves against the pool wall thinking it is ice that they can break through.

Response. There is no evidence to suggest this is true.

E. **Comment.** Maintaining belugas in captivity causes multiple psychological and physical complications. Cetaceans in captivity develop a variety of diseases and health problems.

Response. There is no evidence to suggest that animals in human care at Georgia Aquarium or other accredited institutions develop health problems any more so than their wild counterparts. On the contrary, the beluga whales at Georgia Aquarium receive high quality and consistent medical care. They receive daily exams from their trainers, and any potential issue is immediately reported to the veterinary staff. Additionally, the belugas receive complete, quarterly physical exams which include physical examinations and routine and specialized blood studies including immune profiles and infectious disease screening.

F. **Comment.** Dolphins and whales have post-traumatic stress disorder in captivity.

Response. This is a false statement and there is no evidence to suggest it is true. As noted above, for example, the U.S. government reports it “is unaware of any valid scientific research or other information that documents or supports that [shows or] performances ... cause additional unnecessary stress for the animals.” U.S. Department of Agriculture Swim-With-the-Dolphin Programs Final Rule, 63 Fed. Reg. 47,128 (Sept. 4, 1998).

G. **Comment.** Marine mammals display neurotic behavior in captivity, swimming the same path repeatedly.

Response. This statement is misleading and incorrect. While behavior patterns may have been an infrequent challenge for marine animal caregivers many decades ago, spatial and social opportunities, enrichment, and operant conditioning through positive reinforcement have allowed marine mammals to thrive in human care, reproduce in human care, and to live long lives.

H. **Comment.** Belugas are maintained in chemically-altered water that is unnatural.

Response. Georgia Aquarium has a regular program of monitoring water quality for fish, pinnipeds, cetaceans, and other aquatic animals. That water quality is an equal – if not better - substitute for the water found in our oceans. A written record is maintained to document long-term water quality results and any chemical additions. Monitoring of selected water quality parameters provides confirmation of the correct operation of filtration and disinfection of the water supply available for the animals. There has never been any evidence of any water-quality related illness in Georgia Aquarium’s animals.

I. **Comment.** Belugas have social needs that are not met in a captive environment. In captivity, they are placed in unnatural social settings.

Response. Belugas typically form groups called pods or schools, most often numbering from as few as two to several dozen animals (Gurevich, 1980; Katona et al., 1993; Krasnova et al., 2006). The structure of the pods is fluid, with individuals moving between specific pods. Beluga pods can contain animals of the same sex and age class, but may vary in structure and size seasonally (Gurevich, 1980). Males most often travel in pods of 10-15 individuals that tend to stay away from other groups (Krasnova et al., 2006; Smith et al., 1994). Adult females and their calves and juveniles form pods, while adult females without calves may also form their own groups (Martin, 1996; Richard, 2002). Because of these findings, there is absolutely no reason to believe that the social needs of belugas are not met in human care where small numbers of animals are socially grouped – much as they are in the wild.

J. **Comment.** Belugas in captivity are fed a diet of dead fish laced with medicines. Eating dead fish is unnatural for these animals.

Response. Belugas in human care are given the very same food type they typically hunt, such as salmon and herring. At Georgia Aquarium, medications are used appropriately and as prescribed by the attending veterinarian. The key to this statement is the use of the term “as prescribed,” which is to say that medications are administered only when necessary for the health of the animal, not as regular practice. When consuming food, belugas do not distinguish between fish which are dead or alive. Indeed, wild cetaceans have been documented eating dead fish. Mathias et al. 2009 attached as Appendix I.

K. **Comment.** The “grief” caused by the loss of family members during collection is enough to kill young whales such as the ones being imported.

Response. This anthropomorphic statement is false and unsubstantiated. None of the beluga whales in question have died from “grief” or any other cause.

L. **Comment.** Belugas in captivity are typically on medications, including antacids, to help them cope with stress. Belugas in captivity also suffer from depression.

Response. Some marine mammal studies indicate that animals cared for in accredited facilities may be healthier than free-ranging cetaceans (Bossart 2007 and Bossart 2011, attached as Appendices F and G). Additionally, an abstract published in 2000 as a comparative study of steroid hormones produced by the adrenal cortex, a common measure of stress in animals, demonstrates that stress is not an issue for marine mammals participating in in-water interactive programs (Dold et al 2000, attached herein as Appendix J). Studies submitted to the U.S. government published in 2000 provide clear evidence that the animals are in a healthy environment (Samuel-Spradlin 1994, attached as Appendix K).

M. **Comment.** Chlorine in pools hurts the belugas' eyes and burns their skin.

Response. Georgia Aquarium uses no chlorine in its marine mammal habitats. Furthermore, Georgia Aquarium, which features man-made salt water pools, has a regular program of monitoring water quality for fish, pinnipeds, cetaceans, and other aquatic animals. A written record is maintained to document long-term water quality results and chemical additions. Monitoring of selected water quality parameters provides confirmation of the correct operation of filtration and disinfection of the water supply available for the animals.

N. **Comment.** Belugas have exercise needs that are not met in a captive environment.

Response. This statement is false. The whales at Georgia Aquarium have excellent muscle tone derived from exceptional veterinary and animal care programs. Those programs pro-actively address physical conditioning through play, training, and relationship sessions. Based on all measurable physiological parameters, such as blood samples, examinations, morphometrics, and others, the marine mammals at Georgia Aquarium demonstrate healthy profiles which are commensurate with those of animals we see in the wild.

O. **Comment.** Animals at public display facilities are forced to do "tricks" so they can eat. Animals perform in shows because they are deprived of food.

Response. This comment demonstrates the author has no background in animal training or care. Marine mammal experts know that successful training is always done in a positive manner. Excellent relationships develop when the animal and trainer have a good rapport based on mutual respect and trust. Anything but positive interaction would hurt that bond. Desired behaviors are rewarded or reinforced to increase the probability that the animal will repeat them when asked to do so in the future. This includes secondary reinforcement found in the form of tactile stimulation, verbal praise, enrichment devices (toys), and even food items like ice or jello. If an animal does not respond or offers the incorrect response, the behavior is ignored. Every animal is fed a highly nutritious diet specific to its daily needs. Food rewards during training can be a portion of that balanced diet.

P. **Comment.** Contaminated fish in the diets of captive belugas cause anorexia, dermal plaques, and lesions.

Response. The food is not in any way “contaminated.” Georgia Aquarium goes to great lengths to ensure that the food fed to the animals is at least the same quality as what would be fed to humans in a restaurant setting. Further, belugas in human care are given the same food type they typically hunt: salmon, capelin, smelt and herring. At Georgia Aquarium, those fish are restaurant-quality food product suitable for human consumption. Preventative medical assessments, including daily observations and data recording, routine weight monitoring, full physical examinations including blood and fecal testing, dental examinations, diet supplementation and vaccinations ensure that the health of the animals cared for in AMMPA and AZA-accredited zoos and aquariums is of the highest quality. These assessments facilitate the early detection and treatment of illnesses and zoonotic diseases by well-trained animal keepers and wildlife veterinarians.

Q. **Comment.** A baby beluga was killed by adults in her enclosure. The attack was caused by lack of space and lack of stimulation.

Response. This statement cannot be addressed as it is hearsay and we have no knowledge about the alleged incident.

R. **Comment.** Belugas die in captivity because of fungi that enters the habitat.

Response. There is no proof to support this statement. Georgia Aquarium and other accredited U.S. aquariums are dedicated to maintaining the health of the animals in their care. Georgia Aquarium has attending veterinarians who conduct regular examinations of the animals, ensuring their best possible care.

S. **Comment.** There is conclusive scientific evidence suggesting the presence of spindle cells in many species of whales. These cells are responsible for traits such as empathy, compassion, and self-awareness.

Response. Whether or not this evidence exists is not relevant for consideration of this permit. That said, the theoretical neuro-science being promoted in the comment has not been corroborated by mainstream marine mammal scientists.

T. **Comment.** Children tapping on the glass windows of a pool cause pain to the animals.

Response. There is absolutely no scientific evidence to suggest this is true. Sounds transmitted by a guest who may tap the acrylic are extremely muffled by the bulk and thickness of the acrylic itself. Additionally, attendants at the exhibit monitor the acrylic windows to ensure guests are viewing the animals without contacting the windows themselves. Even music and other ambient noise maintained below a maximum decibel level have been quantified by a third-party scientist as safe for cetaceans (Scheifele 2012 attached as Appendix H).

U. **Comment.** During hurricanes and power outages, the 18 beluga whales will be left to die in their pools.

Response. This is a ridiculous statement. Modern marine mammal aquariums, like Georgia Aquarium, ensure the health and safety of the animals in their care under any number of crisis scenarios and natural disasters. For example, during a massive four-day ice storm in January 2011, while the Aquarium was closed to the public, trainers and animal experts lived at the Aquarium day and night to ensure the animals were well cared for throughout. As is evidenced in APHIS inspections, Georgia Aquarium has state of the art back-up systems in place for power. These systems can produce six megawatts of power, more than enough power to run the Aquarium in the event of an emergency. There is also 12,000 gallons of fuel stockpiled, which would power the building and its exhibits for a full twelve hours at maximum usage, but which would last for days when conserving power – as would be the case during a natural disaster. Finally, even during normal operations, staff is present in the Aquarium 24 hours per day to ensure outside factors have no impact on the collections found within.

V. **Comment.** Belugas and other animals at public display facilities are constantly touched by humans which leads to infection and other diseases.

Response. This comment has no factual foundation. Since the initiation of in-water marine mammal interactive programs nearly thirty years ago, there has not been one instance of disease transmission between humans and cetaceans reported at any of the facilities that offer “swim with the dolphin” and other similar programs.

W. **Comment.** For belugas in captivity, the hypothalamus adrenal cortical pituitary pathogen “goes crazy” with hormones and stress signals that cause these animals to behave erratically.

Response. This comment is unfounded and has no factual basis.

X. **Comment.** Belugas in captivity absorb toxins that are harmful.

Response. This comment is unfounded and has no factual basis.

Y. **Comment.** Aquariums engage in the breeding of underage belugas and cannot teach young mothers to care for their offspring.

Response. It is impossible for any aquarium to force breeding, let alone with animals that are not sexually mature. Through the collective management of the beluga population in human care at accredited North American institutions, the priority is to manage breeding females in social groupings to encourage generational information sharing, particularly as it relates to caring for offspring. To help facilitate successful breeding, exchanges with other facilities will occur, as is the practice with the existing population of animals in human care.

V. **Collection and Collection Technique**

A. **Comment.** The beluga collection techniques are inhumane because they are violent. The animals are rounded up, wrestled into a netlike shirt, dragged through water across a bay, and forced into a pen.

Response. The animals were collected using a humane method which is accepted by scientific methodology worldwide, and is consistent with those used by NOAA/NMFS during cetacean health assessments and interventions. The collection and handling of the beluga whales by the Russians was done in full accordance with the Animal Welfare Act, U.S. and international law, and the bylaws of the zoological associations to which Georgia Aquarium belongs. The collection technique is discussed in the permit application submitted by the Georgia Aquarium and is supplemented by the materials in Exhibits 15 and 16 attached to the letter submitting these responses to public comments.

B. **Comment.** The collection technique used for the animals proposed for import would be illegal in the U.S.

Response. The collection and handling of the belugas by the Russians was done in full accordance with the Animal Welfare Act, U.S. and international law, and the bylaws of the zoological associations to which Georgia Aquarium belongs. The allegation of illegality is unfounded, as U.S. regulatory agencies use the very same methodologies as in NMFS-permitted collections. Attached, for example, as Appendices M and N are the Application for Permit 14245 and the issued Permit 14245 detailing beluga collection methods approved by NMFS. After reviewing such previously-issued NMFS permits regarding beluga whale health assessments, the following can be stated: the processes used by the Russian collectors and scientists are nearly identical to those permitted by NMFS in the U.S. A distinct difference, however, is the NMFS permitted scenario of “tiring the whales” by pursuing the animals at high rates of speed. This activity has been deemed necessary by NMFS given the ecosystems Alaskan whales call home. In stark contrast, the Russian estuarine underwater topography allows for the beluga whales in that region to be collected by waiting for them to slowly swim into shallow water, thus eliminating any pursuit, and any “tiring” requirements. It is important to note that in both the Russian and U.S. paradigms, the concept of a drive fishery utilizing acoustic stimuli to “herd” the whales is not employed.

C. **Comment.** Many cetaceans are killed during collection or die shortly after being placed in a public display facility. An example is the Penn Cove incident in 1970 that killed five southern resident killer whales.

Response. Incidents from over 40 years ago are not relevant to the consideration of this permit. Further, as noted above, the collection techniques employed with respect to the 18 belugas at issue are consistent with those used by NOAA/NMFS during cetacean health assessments and interventions.

D. **Comment.** Several animals in the application are listed as 1.5 years of age. At this age, the animals are still dependent on their mothers. The application states no mother-calf pairs were targeted. How can that be correct?

Response. The comment is misleading. As noted above, the animals were collected using a humane method accepted by scientific methodology worldwide and that is consistent with methods used by NOAA/NMFS during cetacean health assessments and interventions. This includes not placing a net around mother-calf pairs, animals that are less than 8 months of age, or those that are dependent calves. The collection and handling of the beluga whales by the

Russians was done in full accordance with the Animal Welfare Act, U.S. and international law, and the bylaws of the zoological associations to which Georgia Aquarium belongs. Per the permit application submitted by Georgia Aquarium, the animals subject to the request of import have age ranges. Thus, 1.5 years is the bottom of that range. Beluga whales (much like common bottlenose dolphins), have juveniles that are independent by 1.5 years of age.

E. **Comment.** These animals were captured specifically for, and at the request of, the Georgia Aquarium.

Response. These animals were part of pre-existing collections already taking place under permits issued by the Russian Federation. The animals are not owned by Georgia Aquarium and will never be owned by Georgia Aquarium until some time after an import permit is granted. The Russian Federation issues annual permits for the collection of beluga whales from the Sea of Okhotsk. The collecting entities can sell or otherwise dispose of the animals as they wish. Georgia Aquarium has no control over the provisions, terms, or conditions of any collection permit issued by the Russian Federation. Georgia Aquarium has no control over the number of animals a permit authorizes to be collected. Georgia Aquarium does not control the disposition of collected animals.

Recognizing the need to increase the number and the age and genetic diversity of beluga whales among the population of beluga whales in accredited North American facilities, Georgia Aquarium placed a non-refundable deposit with a Russian entity permitted to collect beluga whales so that the permitted entity would not sell 18 of the collected whales to another person until such time as NMFS makes the determination as to whether these animals may be imported into the United States. Thus, to be clear, the whales in question were not collected for, nor are they owned by, Georgia Aquarium. If NMFS were to deny the permit application, the decision as to the fate of the whales will be made by their owner, the Russian collector. If NMFS issues the permit, Georgia Aquarium will only then move forward to become the owner of the animals.

F. **Comment.** The beluga collection technique used by NMFS is inhumane because it allows actions that cut into the blubber.

Response. This comment is difficult to address, as it gives no indication as to what action occurred to allegedly “cut into the blubber.” Given this statement is directed at the collection technique used by NMFS, perhaps NMFS could clarify.

G. **Comment.** Forty years ago, the Canadian government stopped the live capture and export of beluga whales from the Canadian Arctic after two belugas died. Unfortunately, the Russians saw an opportunity to make money and are now green-washing their capture program as scientific research, just like the Georgia Aquarium is green-washing their request to import and display whales as "educational" and not a transparent attempt to profit.

Response. A practice or an incident that occurred in another country 40 years ago has no bearing on the official process in the U.S., nor on the special provisions supporting public display found in the MMPA. The laws and regulations in the sovereign nation of Canada have no applicability in the U.S. Moreover, studies show that seeing and learning about belugas in

person increases understanding of the species, as well as of the potential impact of changes in our oceans (D.L. Sweeney, attached as Appendix O).

VI. Facility Size

A. **Comment.** The pools of Georgia Aquarium are too small and are 24' or less in depth.

Response. The U.S. Department of Agriculture Animal and Plant Health Inspection Service ("APHIS") licenses, inspects, and regulates zoological parks and aquariums that care for marine mammals. Georgia Aquarium is in full compliance with the applicable legal standards and will continue to be in compliance if the import permit is granted. Furthermore, accredited members of AMMPA offer a complex of pools which assure that animals have access to a diverse and energizing living environment. Georgia Aquarium and other U.S. beluga whale holders have state-of-the-art facilities with pool space substantially exceeding APHIS standards. AMMPA standards require substantially more water volume than required by APHIS. For beluga whales, it is 350% more. There has not been one instance in which the size of a pool has had an effect on an animal's well-being resulting in an identified violation of APHIS standards.

B. **Comment.** Public display facilities are too small for large animals such as beluga whales.

Response. APHIS licenses, inspects, and regulates zoological parks and aquariums that care for marine mammals. The Animal Welfare Act specifically dictates spatial requirements that must be met in order to obtain the aforementioned license. Georgia Aquarium is in full compliance with the applicable legal standards and will continue to be in compliance if the import permit is granted. Furthermore, accredited members of AMMPA offer a complex of pools which assure that animals have access to a diverse and energizing living environment. Georgia Aquarium and other U.S. beluga whale holders have state-of-the-art facilities with pool space well beyond APHIS standards. AMMPA standards require substantially more water volume than that required by APHIS. For beluga whales, it is 350% more. There has not been one instance in which the size of a pool has had an effect on an animal's well-being resulting in an identified violation by APHIS.

C. **Comment.** Belugas can dive to 800 meters and 70% of their dives in the wild are over 40 meters deep. Dive depths at public display facilities are inadequate.

Response. The beluga whale pools at the Georgia Aquarium and at other U.S. facilities holding beluga whales comply with the legal standards established by APHIS. That said, the commenter implies that belugas dive to great depths for pleasure, an assumption for which there is no empirical evidence. In fact, it is thought that belugas dive primarily to forage for food. In general, belugas will hunt in a manner that requires the lowest energy expenditure to gain the greatest nutritional rewards. Belugas may also hunt cooperatively to conserve energy. Diving is an important hunting behavior. Belugas can dive deeply to the seabed in search of benthic prey (Martin and Smith, 1999; Richard et al., 1998). In actuality, the deepest recorded beluga whale dive was to 3300 feet (1000 m), and the longest recorded dive lasted 25 minutes (Schreer and Kovacs, 1997). However, most dives do not last this long or go this deep. While belugas do

possess this ability, there is no need to exercise it in public display facilities with readily available, high-quality and nutritious food.

D. **Comment.** The average cetacean is provided with only 1/10,000th of one percent of the space they would regularly use in the wild.

Response. The cetacean habitats at the Georgia Aquarium and at other U.S. facilities comply with the legal standards established by APHIS. That said, there is no basis for this comment. Free-ranging animals use space for a variety of reasons, which may include hunting for prey, escaping predators, and other motivating factors. However, a peer-reviewed study published in the Journal of Applied Animal Welfare Science documented that dolphins in human care, when left to their own choices, spend their time in a wide variety of pools with varying shapes and depths, giving preference to the shallower areas (Shyan et al. 2002, attached as Appendix P). For example, dolphins in human care spend less than 3% of their time in the deepest water. The animals generally prefer moderate-sized areas and spend about a third of their time in the smaller areas of their pools.

VII. Safety

A. **Comment.** Maintaining animals in captivity is dangerous. An example is the recent death of staff at SeaWorld Orlando caused by a killer whale.

Response. There is no inherent proven danger in training and working with marine mammals in human care. The example provided is an isolated incident that has no bearing on the overall management of marine mammals in human care.

B. **Comment.** No wild orca, dolphin, or whale has caused death to humans but marine mammals become aggressive/violent in captivity leading to the deaths of facility staff.

Response. There is no evidence to suggest that marine mammals in human care are any more aggressive than those in the wild. Moreover, this is a false statement as there are documented injuries and deaths of humans while interacting with whales and dolphins in the wild. There is no evidence that suggests that merely being in human care makes them aggressive or violent.

C. **Comment.** SeaWorld has killed animals that try to defend themselves against constant “prodding.”

Response. It is preposterous, and potentially libelous, to suggest that SeaWorld or any accredited institution which displays marine mammals or other animals would knowingly harm them. It is equally preposterous to suggest that any aspect of the loving care these animals receive would be construed as “prodding.”

VIII. Educational Value Of Public Display

A. **Comment.** There is no educational value to captive cetaceans.

Response. 175 million guests visit aquariums and zoos annually. Within the last decade alone, accredited facilities have formally trained more than 400,000 teachers and provided effective teaching materials and hands-on interaction for scientific curriculum around the country. Studies show that seeing and learning about belugas in person increases understanding of the species, as well as the potential impact of changes in our oceans (D.L. Sweeney 2009, attached as Appendix O). *See also* National Science Teachers Association Position Statement, attached as Appendix Q; U.S. Commission on Ocean Policy Final Report at 125, attached as Appendix R; Nature, April 2010, attached as Appendix S.

B. **Comment.** Georgia Aquarium incorrectly tells the public that most of the belugas are rescued animals.

Response. Georgia Aquarium has never misinformed the public about the origins of its beluga whales, the information about which is readily available. That stated, it is an undeniable fact that Georgia Aquarium rescued two male beluga whales from a sub-standard facility in Mexico in 2005. At the time of their rescue, the whales were suffering from significant health issues due to their substandard living conditions in Mexico and the treatment they had received while there.

C. **Comment.** Public display facilities misinform the public about average beluga life spans. Shedd, for example, tells the public belugas live ten years in the wild.

Response. The issue of beluga whale longevity is discussed above. Further, the permit application under consideration is submitted solely by Georgia Aquarium.

D. **Comment.** Children are distressed at seeing marine mammals in captivity. As an example, the dolphin show at Georgia Aquarium has violence that scares young children.

Response. Given that millions of children and families visit U.S. aquariums each year, it is highly unlikely that many are distressed by seeing marine mammals in human care. In fact, quite the opposite is true. A 2012 survey released by PGAV Destinations reveals that among the top things families seek out when planning vacations are togetherness, fun, variety, unique experiences, to learn something new, and to see animals (PGAV Destinations 2012, attached as Appendix T). Characteristics or factors which make these experiences more memorable include interactivity, thrills, authenticity and technology – all of which are offered by Georgia Aquarium and other accredited facilities through exhibits, shows, and interactive programs. Georgia Aquarium consistently surveys its guests regarding their experience, and to date, seeing marine mammals at the aquarium ranks as one of the most appreciated experiences by children and adults.

E. **Comment.** It is illegal for me to swim with a wild dolphin, yet it is considered fine for marine parks with their ‘swim-with programs’ to torture these beings.

Response. It is illegal and dangerous to swim with wild dolphins. NOAA reports document that recreational boaters and swimmers have been injured when illegally feeding or swimming with wild dolphins. However, through controlled experiences with conditioned animals at accredited facilities, guests are afforded the opportunity to experience safe and

educational encounters which inspire action (D.L. Sweeney 2009, attached hereto as Appendix O). These experiences are consistent with all applicable laws and regulations.

IX. Transport

A. **Comment.** Animals suffer stress and are harmed during transport. The flight to the U.S. will likely kill some of the belugas.

Response. There is no reason, nor any relevant historical data, to suggest that a transport, in and of itself, could prove fatal to these beluga whales. Successful animal transports of this nature have been conducted for many years. In fact, no beluga whale has been harmed, injured, or died during transit by Georgia Aquarium or any other U.S. facility holding beluga whales. A recent publication states clearly that stress is a state of normal internal physiological function and that, relative to transport, this internal response occurs over a limited period of time and is not known to compromise the health of the animals (Spoon and Romano 2011, attached as Appendix U). Any stress issues that may arise can and will be effectively dealt with and monitored via good animal management practices.

B. **Comment.** It is inhumane to put the animals through a transfer in Belgium. This transfer procedure will cause unnecessary stress. Animals in transport have elevated stress hormones and there is an elevated risk of mortality after transport.

Response. Given the historical evidence of transport practices by accredited zoological facilities being successful, this commenter's statement is false. A recently published study states clearly that stress is a normal internal physiological function and that, relative to transports, this internal response occurs over a limited period of time and does not compromise the health of the animals (Spoon and Romano 2011, Appendix U). Any stress issues that may arise can and will be effectively dealt with and monitored via good animal management practices. Desensitization and operant conditioning greatly reduces any unpredictability of transport processes and, thus, stress hormone responses.

C. **Comment.** The noise level in the Russian planes does not meet U.S. noise emission standards and this will cause additional stress on the animals.

Response. After decades of successful transports, there is no evidence to suggest sound inside of an aircraft has any bearing on the health or wellbeing of an animal. Furthermore, the Georgia Aquarium transport plan meets standards set by USDA, International Air Transport Association ("IATA"), and AMMPA. The plan ensures that the beluga whales' health and wellbeing is never put at risk.

D. **Comment.** The carbon footprint from this transport contributes to global warming which is adversely affecting Arctic belugas.

Response. There are no regulations in the MMPA pertaining to a "carbon footprint." Carbon emission standards are not a legal standard applicable to the permit application. Furthermore, the commenter offers no evidence that a single transport would have a significant adverse effect on any wild beluga whale population.

E. **Comment.** There is no adequate contingency plan to account for weather and mechanical delays which are likely. In reality, the total transport time will exceed 40 hours.

Response. There is no reason to suggest that weather or mechanical delays are “likely.” Global weather forecasts will be consulted prior to departure to ensure clear skies. Furthermore, regionally-located backup aircraft and redundant equipment can be secured to ensure any mechanic delays are minimized or eliminated. This transport plan meets standards set by USDA, IATA, and AMMPA. The animals will be under the care of a group of 24 to 36 personnel from Georgia Aquarium and colleague institutions that are highly experienced in complex cetacean transports including beluga whales. The plans will ensure that the beluga whales’ health and well-being is never at risk.

F. **Comment.** What specific tests will be done to make certain the animals are fit for transport?

Response. All aspects of the transport plan have been addressed in the application, including health certificates provided by marine mammal veterinarians. Georgia Aquarium will ensure the health certificate required by law is provided.

G. **Comment.** Cetaceans experience stress in transport and that stress is not “short-lived.” Research by staff at Mystic Aquarium documents transport stress.

Response. This is a very misleading statement. The study mentioned proved that while stress hormones can be measured as “increased” during a transport, the very same hormones return to baseline shortly after transport ends and are not something that are known to have compromised any of the animals’ health (Spoon and Romano 2011, Appendix U).

H. **Comment.** Russian reports document beluga deaths during transport.

Response. No beluga whale has been harmed, injured, or died during transit by Georgia Aquarium or by any other U.S. facility holding beluga whales.

I. **Comment.** During the transfer in Belgium, the animals will be subjected to airport noise.

Response. The Georgia Aquarium transport plan meets all standards set by USDA, IATA, and AMMPA. The plan will ensure that the beluga whales’ health and wellbeing is never put at risk. Nevertheless, we have also prepared several transport alternatives set forth in Exhibit 17 to the letter transmitting these responses to public comments.

X. Alternatives

A. **Comment.** Acquiring the belugas at Marineland Canada is an alternative to this import. The Marineland animals need to be rescued.

Response. Marineland of Canada has 41 beluga whales of which 27 were collected in, and imported from, Russia. Fourteen were born in captivity. Of the 27 imported from Russia, two were collected in the White Sea. The place of collection of the remaining 25 is unknown. It

is highly unlikely the import of the animals collected in Russia could be approved under the MMPA. Furthermore, discussions between Marineland of Canada and Georgia Aquarium regarding the acquisition of Marineland's animals were unsuccessful.

It should also be noted that Georgia Aquarium has no authority, legal or otherwise, to “rescue” animals from Marineland of Canada. The animals in question have not been legally slated for rescue by any organization or governing body with jurisdiction over marine mammals.

XI. Captive Breeding Program

A. **Comment.** Captive breeding programs for belugas have not been successful. That is why Georgia Aquarium is proposing to import animals.

Response. Of the current population of beluga whales in human care in accredited public display facilities in North America, more than half – 18 – were successfully born in human care. This can hardly be described as “unsuccessful.”

B. **Comment.** A captive breeding program does not help endangered beluga stocks because none of the calves will ever be released.

Response. Breeding beluga whales is not, and has never been, done with the intent of releasing the animals to the wild. In fact, animals born in human care are not candidates for release because they are not equipped for survival in the wild. Rather, it is vitally important that the zoological community maintain a population of animals in human care for other purposes – education, research, and the development of conservation initiatives that impact their wild counterparts.

C. **Comment.** Cetaceans do not breed successfully in captivity.

Response. This statement is not supported by fact. To illustrate this point, more than half of belugas in accredited North American institutions – 18 – were born in human care. Further, more than 64 percent of dolphins in AMMPA member facilities were born in a park or aquarium. AMMPA member facilities have invested millions of dollars and professional resources in important research, contributing substantially to what is known about marine mammal marine health care, physiology, intelligence, and reproductive biology. Studies have also produced specialized vitamin regimens and nursing formulas so important to healthy pregnancies and healthy calves. AMMPA members use state of the art medical technologies developed for human health care, such as sonograms. As with pregnant humans, this diagnostic tool is used to confirm pregnancy, assess the calf's age, and identify any developmental problems. Accredited marine life parks, aquariums, and zoos are extremely successful in maintaining their collections of dolphins through responsible breeding programs. The medical advances, exceptional care for the animals and creative use of human techniques result in multiple dolphin calves every year. Many of the key discoveries about cetaceans are also applicable to beluga whales.

D. **Comment.** The captive beluga population has declined from 40 animals in the early 1990s to 35 today. This shows the failure of breeding programs.

Response. In no way does the current number of beluga whales in human care indicate a “failure” of beluga breeding programs. In fact, more than half of all beluga whales in accredited facilities in North America – 18 – were born in human care. This can hardly be construed as “failure.”

XII. Impact of Collections on the Wild Population

A. **Comment.** The collection divided and disrupted family units.

Response. In theory, any take from a population, or the death of a member of the population, could disrupt a family unit. However, the collection of the belugas to be imported was conducted over many years from groups of five or less animals. Therefore, any potential disruption of family units relative to matrilineal cultural transmission was greatly minimized. Further, there is no evidence that a removal of this type would have long-term impacts to stock health. The average annual take of 22 belugas from the Sakhalin-Amur population, conservatively estimated at 3,547 animals, represents 0.6% of the population. This is essentially equivalent to the average annual subsistence harvest of 433 animals (2005-2009) from the approximately 75,000 belugas of the four harvested stocks in Alaska (Beaufort Sea, Eastern Chukchi Sea, Eastern Bering Sea, and Bristol Bay) (Allen and Angliss 2012, attached as Appendix A to Exhibit 13 to the letter enclosing these responses to public comments). As has occurred for hundreds of years, many of these animals are killed in organized “mass” hunts targeting whole pods (Morseth 1997, attached hereto as Appendix V), yet there is no evidence that this hunting method and harvest level has impacted the health of the Alaskan beluga stocks or changed patterns of female fidelity to seasonal ranges.

B. **Comment.** Removing these belugas from the wild will have a significant adverse effect on the wild stock.

Response. According to the analysis conducted by Dr. Olga Shpak of the A.N. Severtsov Institute of Ecology and Evolution in Moscow, Russia, and the International Union for Conservation of Nature and Natural Resources (“IUCN”), the average annual removal of 22 beluga whales is well less than 1% of the smallest population group and is below the PBR of 30 for that group. Based on the scientific methodology used to estimate the southern Sea of Okhotsk beluga populations, and the conservative formula used by IUCN to calculate the PBR, beluga removal at the levels occurring during the last five years would not have an adverse effect on that population. This was the conclusion of the IUCN panel. However, as discussed in the testimony of Gregory Green at the October 12, 2012 NMFS hearing, attached as Exhibit 13 to the letter enclosing these responses to public comments, the IUCN used extremely conservative population estimates and methodology in calculating PBR. Mr. Green noted that if the methodology by NMFS (*see* Allen and Angliss 2012) had been used by the IUCN to calculate PBR and population estimates, then the percentage of the total population collected would have been far lower than indicated in the IUCN Report.

C. **Comment.** There are known examples of wild populations of animals being “decimated” due to removals for public display. An example is SeaWorld and other marine parks removing almost an entire generation of southern resident orcas in the 1960s and 1970s. This was a major factor in the species being listed as endangered.

Response. The cited example pertains to removal of killer whales from inland waters of British Columbia and Washington for aquaria in the 1960s and 1970s. The bulk of these removals occurred in a five-year period (1967-1971) just prior to passage of the Marine Mammal Protection Act of 1972, concentrating largely on the southern resident stock. The total removals during this period were at least 36 animals, which led to a population decline of approximately 30% between 1967 (96) and 1971 (67) (NMFS 2008). The average annual take from 1967-1971 was nearly 9%. The current annual removal of whales in the southern Sea of Okhotsk averages only 0.6% of the current population. The comparison is inapposite.

D. **Comment.** The Sea of Okhotsk beluga population is considered near-threatened by IUCN and animals should not be removed from that population.

Response. An IUCN panel of beluga experts reviewed the population data and calculated the original PBR for this population. This calculation included a recovery factor variable to account for the status of this population. The IUCN concluded that the annual harvest from this population did not exceed the calculated PBR and, therefore, does not constitute a population level risk. However, as noted above, the IUCN calculated PBR using a formula that is different, and more conservative, than that used by NMFS.

It should also be noted that the IUCN designation of beluga whales as near threatened is not specific to the Sea of Okhotsk population of beluga whales. The current designation was made in 2008 wherein the IUCN stated:

At the global level the species does not qualify for a threatened status under any of the criteria although there is substantial uncertainty about numbers and trends for at least some large parts of the range, especially in the Russian Arctic. Given that uncertainty, and the fact that cessation of national and international taxon-specific conservation programs that currently monitor and manage hunting could result in the beluga's qualifying for threatened status (under criterion A3) within five years, the species should be listed as Near Threatened.

Jefferson, T.A., Karkzmarski, L., Laidre, K., O'Corry-Crowe, G., Reeves, R., Rojas-Bracho, L., Secchi, E., Slooten, E., Smith, B.D., Wang, J.Y. & Zhou, K., 2012 *Delphinapterus leucas*, in: IUCN 2012, IUCN Red List of Threatened Species, Version 2012.2, available at <www.iucnredlist.org>, attached as Appendix W.

The referenced criterion A3 provides that the population may decline between 30% and 90% over ten years or three generations. See IUCN Standards and Petitions Subcommittee, 2011 Guidelines for Using the IUCN Red List Categories and Criteria, Version 9.0, prepared by the Standards and Petitions Subcommittee, available at <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>, attached as Appendix X; and 2001 IUCN Red List Categories and Criteria: Version 3.1, IUCN Species Survival Commission, attached as Appendix Y. There is no evidence of such a decline in Sea of Okhotsk beluga whales.

E. **Comment.** Collection causes localized population depletion.

Response. The commenter's reference to "localized population" is unclear. Given that belugas captured in Sakhalin Bay moved as much as 60 miles from capture site during the summer months (Shpak 2011), we can infer that the "localized" population in question is the Sakhalin-Amur summer aggregation. Further, the issue is not depletion, but whether the annual removal is sustainable. Based on the studies by Shpak (2011) and the calculations by the IUCN panel (Reeves et al. 2011), the average annual removal of 22 animals does not exceed even the most conservative estimate of PBR (30 animals for the Sakhalin-Amur population alone). The average annual removal is far from unsustainability.

F. **Comment.** In 1999, the Species Survival Commission ("SSC") noted Russian officials had issued a permit for 200 belugas to be hunted in the Sea of Okhotsk. Thirty-one were taken and the SSC feared this could send the Sea of Okhotsk population into a decline.

Response. Concerns about the beluga harvest in 1999 derived from the fact that there were no accurate population estimates available at the time to determine the impact of the planned harvest on the population. Since that time, population studies have been conducted. Based on the recent population estimates and the conservative PBR calculated for this population by the IUCN panel and Dr. Olga Shpak of the A.N. Severtsov Institute of Ecology and Evolution in Moscow, Russia, the 1999 harvest of 31 animals would not have sent the Sea of Okhotsk population into a decline.

G. **Comment.** Few, if any, aquariums release stranded animals to the wild.

Response. The MMPA does not require that public display facilities release animals to the wild. Such release is not a condition for receiving a permit to import animals pursuant to the MMPA. Furthermore, the comment is not factually correct. A review of NMFS' stranding network history is proof that aquariums release animals that are deemed fit for release to the wild. Aquariums which rescue and/or house stranded animals do not make the determination as to whether the animals are releasable or not. That decision is made by NMFS, under guidelines developed by NMFS and U.S. Fish and Wildlife Service, in accordance with the MMPA. Stranded animals are evaluated and categorized as Releasable, Conditionally Releasable, Conditionally Non-releasable (Manatees only), and Non-releasable. Animals deemed releasable or conditionally-releasable are candidates for release. Those deemed non-releasable and unable to survive on their own in the wild are given good homes in accredited U.S. public display institutions.

H. **Comment.** The Sakhalin-Amur beluga population is still recovering from being hunted in the 1960s.

Response. The degree to which the Sakhalin-Amur beluga population has recovered since the 1960s is unknown. Comparing population estimates is confounded by the use of different correction factors to account for animals missed during surveys because they were below the surface. The IUCN panel estimate of 3,547 animals is based on a correction factor of 2x (that is the number of animals sighted multiplied by two) applied to Shpak's (2011) survey data to account for missed animals. Previous Russian estimates used a correction factor of 12x

based on the recommendation of Belkovich (1960, in Melnikov 1999, attached as Appendix Z). If the 12x correction factor were applied to the survey data collected by Shpak (2011), the Sakhalin-Amur population estimate alone would inflate to about 20,000. Further, Melnikov (1999) points out there are no reliable population estimates prior to the whaling periods. Regardless, the IUCN panel accounted for the possibility that the Sakhalin-Amur and Shantar populations were still recovering by applying a 0.5 recovery factor to the PBR estimate.

I. **Comment.** These 18 belugas were collected for Georgia Aquarium. Therefore, Georgia Aquarium is encouraging/supporting wild captures. Stating the animals would have been collected anyway is no defense.

Response. As noted above, the beluga whales subject to the permit application are not owned by, nor were they collected for, the Georgia Aquarium. The Russian Federation issues annual permits for the collection of beluga whales from the Sea of Okhotsk. The collecting entities can sell the animals as they wish after the animals have been collected. As to whether this import permit, if granted, will result in future collections, the Georgia Aquarium has no control over any aspect of any beluga whale collection permit that has been, or may be, issued by the Russian Federation to Russian entities.

J. **Comment.** The research on Sea of Okhotsk beluga populations should have been done before, not after, the collection of animals.

Response. The Georgia Aquarium has no control over whether the Russian Federation issues beluga whale collection permits to Russian entities. Nor does Georgia Aquarium control the terms and conditions of those permits. This is true with respect to past, present, and future permits issued by the Russian Federation. The stock assessment research funded by Georgia Aquarium was the most comprehensive assessment done to date and can now be used by the Russian Federation, and others, to assess the impact of any removals of beluga whales from this population.

K. **Comment.** Georgia Aquarium assumed throughout the application that the likelihood was strong, based on nuclear DNA analysis, that the Sakhalin-Amur population mixed during the breeding season with the Shantar population, which it argued would give a higher overall sustainable removal level for all sources of human-caused removals (increasing the sustainable removal level from 30 to as high as 86). This is *not* precautionary thinking, which is counter to the aquarium's self-styling as "a leading facility for aquatic animal conservation and research," and is evidence of its attempt to minimize and downplay the actual impacts of this request.

Response. When determining a stock's PBR, it is necessary to define the geographic boundaries of the stock. Whether the Shantar and Sakhalin-Amur aggregation comprise a single or multiple stock has been argued for over 50 years, with some of this argument based on the ever-changing definitions of what constitutes a "stock." The genetic and tagging studies that were conducted in the Sea of Okhotsk did provide evidence of population exchange between the two regions, which would provide support for a single stock theory and a higher PBR. However, the permit and supporting documents do not "advocate" for a single stock but, rather, provide PBR estimates on three different interpretations of stock affinity, including the most

“precautionary” PBR of 30. The point remains that the annual average removal of 22 animals is below the lowest PBR of 30 animals. Nevertheless, it should be noted that the genetic data indicate the belugas from the Shantar and Sakhalin regions comprise one genetic stock. The mitochondrial DNA data suggest a degree of site fidelity to bays that is not absolute and the telemetry data indicate females move among the bays in the Shantar and Sakhalin areas.

L. **Comment.** IUCN reviewed the sustainability research funded by Georgia Aquarium and others, and noted that “the sustainability of removals from [the Sakhalin-Amur population] *does not depend* on whether there is interbreeding, or mixing, outside of the season when belugas are captured” (emphasis added). What is relevant for the live capture operation is the strong site fidelity of females during the feeding season (when they are captured). These smaller, distinct summer feeding aggregations are susceptible to overexploitation. Georgia Aquarium ignored this point entirely in the permit application.

Response. The comment is incorrect. Appendix A to the permit application presents great detail regarding site fidelity and group fidelity. To determine the stock PBR requires a definition of the stock. It has been argued for over 50 years whether the Sea of Okhotsk supports one or multiple stocks of beluga whales. One of the results of the recent stock assessment research on the Sea of Okhotsk beluga whales is to assure the PBR is applied correctly. Because the research provided evidence for a single stock based on genetics and tagging, the permit application noted the potential effect on the PBR calculation of combining the Shantar and Sakhalin-Amur aggregations. However, the permit continued to recognize that the PBR for the smaller Sakhalin-Amur aggregation is 30 animals, a PBR that is higher than the five-year average annual removal of 22 animals. It should also be noted that the proportion of belugas collected from the Sakhalin-Amur area, including females, is small compared to the total number of whales in this area. Furthermore, the genetic data and the telemetry movement data show there is interbreeding and movement of belugas among the Shantar and Sakhalin area bays. This indicates that the whales in the entire Sakhalin-Amur region could be considered one genetic stock, with a higher PBR than for the Sakhalin area alone.

M. **Comment.** The sustainable removal level of 30 animals per year from the Sakhalin-Amur population could devastate a matriline if all captures were made from one location, as the permit application indicates is the case (all captures relevant to this permit application took place at Chkalova Island). This concern is exacerbated by the fact that young females are preferred by public display facilities, as evidenced by the permit application and the age/sex ratio of the 18 animals to be imported.

Response. There is no evidence to support this comment. Only 10 of the 18 whales, 56%, were female, which is not evidence that young females were preferred. Collections came from groups of five or less, and did not remove animals from groups containing yearlings or calves. Collections were conducted over several months and over several years. Given the relatively long life span of these animals, lifetime fecundity, the size of the Sakhalin Bay population (>3,000), the associated number of matriline, and the small number animals that are annually removed (22, of which approximately half are male), the contention that the collection program consistently removed animals from a single matriline to the point of “devastation” is not mathematically supportable. Beluga matriline are hierarchal and basically include all the living

female descendants of the oldest females. Single matriline hierarchies could include several dozen females, large enough to absorb the small annual collection of young females. As a comparison, there are 20 recognized matriline in the 87-member southern resident killer whale population (NMFS 2008). Applying the same ratio to the Sakhalin-Amur beluga population would imply the presence of over 800 matriline. Further, over 400 belugas are harvested annually in Alaska and Canada largely in organized “mass” hunts in shallow-water aggregation areas (Morseth 1997, Allen and Angliss 2012). These hunts, which can target whole pods, have been going on for hundreds of years without any evidence of population-level effects or changes to patterns of female fidelity to seasonal ranges.

N. **Comment.** Even if the overall population in the Sea of Okhotsk does not decline, localized depletions may result in the loss of important matrilineally inherited gene complexes, as well as important cultural, behavioral, and social information that are contained and transmitted within these matrilineal groups. Georgia Aquarium and its partners did not consider this social aspect of live captures, either in their research or the permit application.

Response. The average annual number of animals removed from the Sakhalin-Amur area represents well less than 1% of the Sakhalin-Amur summer population, and the collection program occurring under the Russian permit results in the collection of young animals of both sexes. Matriarchal adult females important in transmitting cultural information are not collected. Further, matrilineal systems are hierarchal, meaning only a portion of the adult females are responsible for the bulk of the cultural transmission. Removal of a few young females long before they can reach any level of hierarchal dominance is unlikely to disrupt existing or future matrilineal complexes. The comment that there could be loss of matrilineally inherited gene complexes is speculation, and is countered by the analysis showing that only a small proportion of the population will be removed. Loss of significant genetic variation is likely only with reduction of the population to the size where the effects of genetic drift and inbreeding may be manifested. This is not the case for the beluga whales in the Sakhalin-Amur region. Finally, any alleged impact on the social aspect of live captures is mere speculation not supported by any data.

O. **Comment.** Georgia Aquarium assumed throughout the application that live captures are the main source of anthropogenic removals, which would suggest that the sustainable removal level of 30 has not been exceeded on average (since the average live capture removal has been 21 animals annually for the last decade). However, the information on other sources of human-caused take is deficient, weakening this assumption. In fact, the Sea of Okhotsk live capture operation on its own has exceeded the sustainable removal level (in fact, 33 were taken in 2011, which means the last capture for Georgia Aquarium was in a year of over-exploitation). The government-established quotas for live captures (ranging from 40 to 57 animals) are certainly not precautionary, begging the question of the appropriateness of Georgia Aquarium utilizing this live capture operation.

Response. Efforts were made to determine the level, if any, of other human-caused take. These efforts included discussions by the research team with local villagers. No evidence of significant additional mortality was found. Further, NMFS does not evaluate anthropogenic loss on an annual basis, but rather on a five-year running average. The five-year average, including

the 31 whales removed in 2011, is 22. Moreover, the 33 animals removed in 2011 do not represent an “over-exploitation.” The PBR calculated by IUCN is a highly conservative estimate of the number of animals that can be removed while still allowing the stock to reach or maintain its optimum sustainable population.

P. Comment. The IUCN noted that anthropogenic take of belugas, from entanglement, hunting, ship strikes, etc., in the Sea of Okhotsk (other than live capture) is probably minimal. However, it is not non-existent, and frankly monitoring of these types of take is low in the region. Regardless, the live capture operation leaves a minimal buffer for other sources of human-caused removals in the Sakhalin-Amur area (only 9 or 10 additional animals could be killed or removed per year on average by human activities if the sustainable removal level is not to be exceeded). Neither the permit application nor the Environmental Assessment adequately address this issue.

Response. As noted above, significant effort was made to evaluate additional anthropogenic take. No evidence was found to suggest this take was anything more than minimal, and certainly not high enough, when combined with the five-year average annual collection to exceed the PBR. Finally, the definition of the PBR is the maximum number of animals that may be removed from a marine mammal stock while allowing the stock to reach or maintain its optimum sustainable population. It is not the sustainable removal level. Further, to fully understand beluga population dynamics, an assessment of the carrying capacity, levels of predation, starvation, disease, stranding, other non-human causes of mortality and dispersal is needed. The field of wildlife management relies on these factors to gauge the allowable hunting/trapping/fishing harvest levels. When such information is limited, caution is used in setting levels of harvest. This is the case for the collection of belugas from the Sea of Okhotsk, where a minimal PBR is used.

Q. Comment. Marine parks in the U.S. claim they never take an animal from the wild unless it is a rescue. This is not true.

Response. The Georgia Aquarium has never made such a claim. Further, this comment has no relevance to the applicable legal standards under the MMPA.

R. Comment. The Russian Federation has a total quota of more than 1,000 beluga whales per year, and we do not know if that is sustainable. The 2012 quota is more than 200 in the Sea of Okhotsk.

Response. We do not know what level of collection is permitted by the Russian Federation outside the Sea of Okhotsk and only have data on permitted collections in 2011 and before.

S. Comment. Annual removals in the Sakhalin-Amur area have a cumulative impact on the wild population.

Response. The PBR is defined by the MMPA “as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.” Given that the average

annual removal of belugas (22) is well below the most conservative PBR for the Sakhalin-Amur population (30), these removals will not prevent the population from reaching its “optimum sustainable population.” Thus, any “cumulative impact” on the population is likely to be negligible.

T. **Comment.** Russia does not have the expertise to protect the beluga populations in its waters.

Response. The commenter offers nothing other than his/her view about the credentials of Russian scientists. More to the point, the stock assessment research funded by Georgia Aquarium enables scientists to determine the PBR for the Sea of Okhotsk beluga whales.

U. **Comment.** The permit application is clear that there are an unknown number of belugas that are removed from the stock as a result of subsistence hunting, by-catch, natural mortality events, and illegal activity. It is clear from the documentation offered by Georgia Aquarium that the number of belugas removed from this stock is unknown.

Response. The IUCN special panel reviewed the available data and determined that any such take is insignificant, if it exists at all. Reeves, et al. 2011.

Georgia Aquarium Response to Comments

Index of Appendices and Exhibits

Binder 1 - October 29, 2012

Appendix

- A Harris Interactive Marine Mammal Poll, February 2012. Alliance of Marine Mammal Parks and Aquariums.
- B Ridgway, S. H. 2008. History of veterinary medicine and marine mammals: A personal perspective. *Aquatic Mammals* 34, 471-513.
- C van Heel, W.H.D. 2009. Aquatic Mammals: A Journal and an Association. *Aquatic Mammals* 35.3, pp 403-411.
- D Evans, W.E. 2008. A Short History of the Navy's Marine Mammal Program. *Aquatic Mammals* 34.3, pp 368-380.
- E Wells, R.S. 2000. Reproduction in Wild Bottlenose Dolphins: Overview of Patterns Observed During a Long-Term Study, *Bottlenose Dolphin Reproduction Workshop Report*, pp 57-74. AZA Marine Mammal Taxon Advisory Group, Silver Spring, MD. Debbie Duffield and Todd Robeck (Eds.)
- F Bossart, G.D. 2007. Emerging Diseases in Marine Mammals: from Dolphins to Manatees, *Microbe* Volume 2 Number 11, pp 544-549.
- G Bossart, G.D. 2011. Marine Mammals as Sentinel Species for Oceans and Human Health, *Veterinary Pathology* 48.3, pp 676-690
- H Scheifele, P.M., J.G. Clark, K. Sonstrom, H. Kim, G. Potty, J.H. Miller, and E. Gaglione. 2012. Ballroom Music Spillover into a Beluga Whale Aquarium Exhibit, *Advances in Acoustics and Vibration*, pp 1-7.
- I Mathias, D., A. Thode, J. Straley, and K. Folert. 2009. Relationship between Sperm Whale Click Structure and Size Derived from Videocamera Images of a Depredating Whale, *Journal Acoustical Society of America* 125.5, pp 3444-3453.
- J Dold, C., J. Sweeney, T. Reiderson, J. McBain, and S. Monfort. 2000. Circulating Levels of Cortisol and Aldosterone in the Atlantic Bottlenose Dolphin (*Tursiops Truncatus*): A Comparative Look at Display Animals, International Association for Aquatic Animal Medicine Proceedings.
- K Samuels, A. and Spradlin, T. 1994. Quantitative Behavioral Study of Bottlenose Dolphins in Swim-with-the-Dolphin Programs in the United States, Final Report to National Marine Fisheries Service Office of Protected Resources, 25 April 1994.

- L Assurance of Animal Care and Use Form AFSC/NWFSC IACUC for Cetacean Research by AFSC, NMML, CAEP (PI Philip Clapham)
- M National Marine Mammal Laboratory NOAA National Marine Fisheries Service Permit to Take Protected Species for Scientific Purposes, Permit Number 14245-01.
- N Morseth, C.M. 1997. Twentieth-Century Changes in Beluga Whale Hunting and Butchering by the Kanigmiut of Buckland, Alaska, *Arctic* 50.3, pp 241-255.
- O Sweeney, D. L. 2009. Learning in Human-Dolphin Interactions at Zoological Facilities, Sweeney, Diane L. Dissertation University of California, San Diego.
- P Shyan, M.R., D. Merritt, N.M. Kohlmeier, K. Barton, and J. Tenge. 2002. Effects of Pool Size on Free-Choice Selections by Atlantic Bottlenosed Dolphins at One Zoo Facility, *Journal of Applied Animal Welfare Science* 5.3, pp 215-225.
- Q National Science Teachers Association Position Statement on Informal Science Education (January 1998)
- R U.S. Commission on Ocean Policy. 2004. *An Ocean Blueprint for the 21st Century*, Final Report. Washington DC.
- S Learning in the Wild, Editorial. *Nature* 464 (April 2010): pp 813-814.
- T The Art of the Family Vacation: A National Research Project, PGAV Destinations. *Destinology* 9.1 (July 2012)
- U Spoon, T.R. and T.A. Romano. 2012. Neuroimmunological Response of Beluga Whales (*Delphinapterus leucas*) to Translocation and a Novel Social Environment. *Brain, Behavior, and Immunity* 26, pp 122-131.
- V Morseth, C.M. 1997. Twentieth-Century Changes in Beluga Whale Hunting and Butchering by the Kanigmiut of Buckland, Alaska, *Arctic* 50.3, pp 241-255.
- W IUCN web entry for *Delphinapterus leucas*
(<http://www.iucnredlist.org/details/6335/0>) downloaded on 10/18/2012
- X IUCN Standards and Petitions Subcommittee. 2011. Guidelines for using the IUCN Red List Categories and Criteria, Version 9.0. Prepared by the IUCN Standards and Petitions Subcommittee. Downloadable from <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>
- Y 2001 IUCN Red List Categories and Criteria version 3.1.
<http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria> downloaded on 10/19/2012

- Z Melnikov, V.V. 1999. The Beluga Whale (*Delphinapterus leucas*) of the Sea of Okhotsk, Report of International Whaling Commission, SC/51/SM27.

Exhibit

- 1 Georgia Aquarium's Response to Comments – Part 1
- 2 Oral Testimony, Public Hearing – October 12, 2012- David Kimmel, President and Chief Operating Officer, Georgia Aquarium
- 3 Oral Testimony, Public Hearing – October 12, 2012- Vice Admiral Conrad C. Lautenbacher, President and Chief Executive Officer, Consortium for Ocean Leadership and Member, Georgia Aquarium Board of Directors
- 4 Oral Testimony, Public Hearing – October 12, 2012- Dr. Brian Davis, Vice President of Education, Georgia Aquarium
- 5 Oral Testimony, Public Hearing – October 12, 2012- Alison Chaney Shelton, Elementary School Principal, Atlanta, Georgia
- 6 Oral Testimony, Public Hearing – October 12, 2012- Keith Kulikowski, Middle School Science Teacher, Piney Grove, Georgia
- 7 Oral Testimony, Public Hearing – October 12, 2012- Dr. Louise Bauck, Chair, Brenau University Biology Department, Gainesville, Georgia
- 8 Oral Testimony, Public Hearing – October 12, 2012- Dr. Grey Stafford, Director of Conservation, World Wildlife Zoo and Aquarium
- 9 Oral Testimony, Public Hearing – October 12, 2012- Dr. Debborah Colbert, Vice President for Conservation, Association of Zoos and Aquariums
- 10 Oral Testimony, Public Hearing – October 12, 2012- Kevin Willis, Chair, Alliance of Marine Mammal Parks and Aquariums Population Management Task Force
- 11 Oral Testimony, Public Hearing – October 12, 2012- Dr. Gregory Bossart, Senior Vice President, Chief Veterinary Officer, Georgia Aquarium
- 12 Oral Testimony, Public Hearing – October 12, 2012- Eric Gaglione, Director of Zoological Operations/Mammals and Birds, Georgia Aquarium
- 13 Oral Testimony, Public Hearing – October 12, 2012- Gregory A. Green, Wildlife Ecologist, ICF International

Attachment

- A. Allen, B.M., and R.P. Angliss. 2012. Alaska marine mammal stock assessments, 2011. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-234, 288p.
- B. Duval, W.S. 1993. Proceedings of a workshop on Beaufort Sea beluga: February 3-6, 1992, Vancouver, B.C. Environmental Studies Research Funds Report No. 123. Calgary. 33p. plus appendix.

Exhibit

- 14 Oral Testimony, Public Hearing – October 12, 2012- Matthew Cronin,
Professor of Animal Genetics at the University of Fairbanks Alaska.
- 15 Additional photographs of the collection methodology
- 16 Computer-generated video of the collection (jumpdrive)
- 17 Transport alternative analysis



January 8, 2012

Mr. Michael Payne
Permits and Documentation Division Chief
Office of Protected Resources
National Oceanic and Atmospheric Administration
United States Department of Commerce
Silver Spring Metro Center 3
1315 East-West Highway, Room 13822
Silver Spring, MD 20910

RE: File No. 17324

Dear Mike:

Georgia Aquarium is pleased to submit for your review and consideration supplemental responses to public comments filed regarding Georgia Aquarium's application for a Marine Mammal Protection Act permit to import 18 beluga whales from Russia. On October 29, 2012, Georgia Aquarium submitted responses to public comments that had had been filed as of 12:00 a.m. October 25, 2012. This supplemental document responds to public comments submitted after that time. The supplemental responses, attached hereto as Exhibit 1, are complete except for the responses to comments identified in Part IX(A) and (E) of Exhibit 1. Those comments, relating to allegations of stress, are being reviewed by a panel of veterinary and scientific experts. The analysis undertaken by that panel will be submitted under separate cover.

If you have any questions about the contents of this letter and the attached material, or any other matter, please feel free to contact me.

Sincerely,

William C. Hurley IV



Enclosures

SUPPLEMENTAL RESPONSES TO ADDITIONAL PUBLIC COMMENTS ON THE PERMIT APPLICATION

I. General

A. **Comment.** Granting the permit would be perceived by collection entities in Russia as an incentive to capture other animals because the export is being “legitimized by the United States – a country seen as having minimal corruption within environmental agencies....”

Response. At the outset, if this comment by HSUS is intended as an accusation or implication of corruption regarding the consideration of Georgia Aquarium’s permit application, it is both false and libelous. If HSUS has evidence of corruption at NMFS or any other U.S. environmental agency, HSUS should produce the evidence. Otherwise, HSUS should cease making libelous statements. Moreover, as noted in Georgia Aquarium’s initial response to public comments, the collection of beluga whales subject to the permit application was done by Russian entities pursuant to permits issued by the Russian Federation. The Georgia Aquarium had no control over the number of animals allowed to be collected pursuant to those permits. Georgia Aquarium has no control over the actions of a foreign sovereign and no control over the provisions, terms, or conditions of any permit that may be granted by the Russian Federation. The Georgia Aquarium does not own the beluga whales that were collected and will not own the animals unless and until NMFS grants the import permit. If the import permit is not granted, Georgia Aquarium has no control over the disposition of the collected animals. The facts are that the Russian Federation is a sovereign nation with its own regulatory agencies and scientific advisors. The Russian Federation will not increase or decrease its use of natural resources based on a single import event by Georgia Aquarium. To suggest otherwise is a claim with no factual basis.

B. **Comment.** Ocean Park in Hong Kong decided to not import beluga whales from Russia.

Response. What another facility in another country did or did not do has nothing to do with the requirements of the MMPA.

C. **Comment.** NMFS should impose permit conditions requiring various studies on the “stress” associated with transport and living in captivity. NMFS should also require Georgia Aquarium to conduct stock assessment research on beluga whales in the Sea of Okhotsk.

Response. Imposing such terms and conditions exceeds NMFS’ legal authority under the MMPA. However, it should be noted that Georgia Aquarium provided the funding for a third party scientific team to study and assess the population of beluga whales in the Sea of Okhotsk. These data represent the best scientific information currently available.

D. **Comment.** NMFS should require Georgia Aquarium to provide reports on the animals’ health and their care and maintenance.

Response. The MMPA vests APHIS, not NMFS, with responsibility for the care and maintenance of animals at public display facilities. To the extent the commenter is addressing

the care and maintenance of the animals while they are in Russia, the animals are being cared for at facilities, and pursuant to standards, that equal or exceed the requirements for U.S. facilities.

E. **Comment.** The current scientific evidence does not support taking cetaceans from the wild.

Response. The MMPA specifically allows such taking.

II. Research Programs

A. **Comment.** Research by the zoological community on beluga whales in captivity is lacking. Of 1,628 unique articles involving 16 species of cetaceans found in the wild and in captivity, only 32% of studies of cetaceans have been done with captive animals, and 43% of those were with bottlenose dolphins.

Response. This comment makes the precise argument as to why this importation is so critical. While much knowledge regarding cetaceans has been gained through past research on animals in human care in the United States, the data required to create protected Arctic ecosystems by international governments is incomplete or otherwise lacking. Georgia Aquarium and its colleague facilities have demonstrated their ability to gather scientific information that could not be gained without the housing and training of marine mammals. This information will be critical in developing and implementing appropriate Arctic conservation programs.

B. **Comment.** There are no studies showing that keeping marine mammals in captivity is beneficial for their wild counterparts.

Response. There is no requirement in the MMPA for any such showing as a condition of importation. That said, as noted above, research on animals in human care is critical to developing and implementing conservation programs in the wild. Further, as the agency knows, marine animals are rehabilitated and released after strandings, injury, extreme climate shift events, etc. The physiological knowledge gained over many decades of studying marine mammals in human care is the basis on which veterinary professionals are able to reintroduce species into their home ranges. Likewise, environmental impact statements created to address natural resource exploration are full of scientific citations stemming from studies completed with marine mammals in human care.

C. **Comment.** I was employed as an animal trainer at SeaWorld from 1990 to 1993. During that time I saw only one research project, and knew of no programs which contributed to conservation of wild populations. I know more about whales and dolphins now than I did when I worked as a trainer.

Response. The commenter, Samantha Berg, has not been known to have held an animal trainer position in nearly twenty years. Ms. Berg is not a scientist nor did she hold any position at SeaWorld during her short tenure there that included research and conservation programs in her job description. What she does or does not know about cetaceans currently has no relevance to the Georgia Aquarium's permit request.

III. Longevity

No additional public comments.

IV. Animal Care at Public Display Facilities

A. **Comment.** The conditions in which the belugas are currently kept likely violate care and maintenance standards established by APHIS and the MMPA.

Response. The facility at which the belugas are being maintained, and the veterinary and other care provided during the pendency of this permit application, meets or exceeds applicable U.S. standards. The commenter offers no proof to the contrary.

B. **Comment.** Public display facilities cannot successfully maintain beluga whales. In 1991, two wild born belugas died one month after arriving at a U.S. public display facility. In 2003, Sea World Florida reported the death of a four year old captive born beluga. Sea World Texas has reported the death of four young belugas (three were less than four years old) since 1995. Sea World California reported the death of a 15 year old beluga in 1986. All of these deaths were of animals that should have had a longer life span. Their deaths and the deaths of belugas at other facilities that show public display facilities cannot successfully maintain belugas in captivity.

Response. Selective data points cited by the commenter do not represent the comprehensive database discussed in the permit application and in Georgia Aquarium's initial response to comments that shows whales in human care live as long as those in the wild.

C. **Comment.** The Merck Veterinary Manual states pneumonia in captive marine mammals "often can be considered the result of mismanagement." Belugas in captivity can suffer from, and do die from, pneumonia.

Response. This comment is conjecture as opposed to fact. The commenter is attempting to compare the incidence of pneumonia in the wild with the incidence among animals in human care. An exhaustive literature search reveals numerous scientific studies stating pneumonia is a major factor in the mortalities of wild marine mammals. Citations supporting this include the CRC Handbook of Marine Mammal Medicine, specifically the chapter "Bacterial Diseases of Cetaceans and Pinnipeds" at 325.

D. **Comment.** As a former animal trainer at SeaWorld from 1990 to 1993, the veterinary care I witnessed was rudimentary at best, and those working in the industry now tell me it is still this way.

Response. The commenter, Samantha Berg, is neither a veterinarian nor a veterinary technician. Thus, her opinion regarding SeaWorld's veterinary care program is not based on scientific knowledge. Likewise, hearsay accusations from persons allegedly still employed at SeaWorld have no legal standing.

E. **Comment.** Georgia Aquarium lacks the husbandry facilities and the husbandry skills to care for 18 beluga whales.

Response. This comment has no basis in fact. The Georgia Aquarium meets all standards and requirements found in the Animal Welfare Act and holds a license issued by the United States Department of Agriculture.

F. **Comment.** The conditions in which beluga whales are kept at Georgia Aquarium is too noisy and that is harmful to the whales.

Response. An independent expert review of the sound levels in the cetacean pools at Georgia Aquarium showed the sound levels were equal to or less than those experienced by belugas in the wild. That study is attached as Appendix A.

V. **Collection and Collection Techniques**

A. **Comment.** The last import of cetaceans collected in foreign waters was in 1992. This permit request is therefore highly regressive, undermining two decades of permanent cessation of importing cetaceans from the wild by U.S. public display facilities. The collection violates the public trust.

Response. The MMPA allows the importation of marine mammals. The MMPA also allows the collection of marine mammals from the wild. These statutory authorities remain in effect. Further, as noted in Georgia Aquarium's initial response to public comments, the beluga whales that are the subject of the import permit application were not collected for Georgia Aquarium.

B. **Comment.** Georgia Aquarium has unfairly prejudiced NMFS' decision by capturing belugas in anticipation of receiving a permit, despite the MMPA requirement for NMFS to consider public input before making a decision on a permit application.

Response. As noted above, the whales were not collected for Georgia Aquarium.

C. **Comment.** The method of capture described in the application seems similar to a widely-circulated 1999 video of captures in the Sea of Okhotsk in which the animals are clearly distressed.

Response. Georgia Aquarium sent observers to witness the collection and handling techniques in the Sea of Okhotsk to ensure that the same humane methods utilized and permitted by the National Marine Fisheries Service within U.S. waters were followed. At no time was there a deviation from the strategies used by NMFS scientists and biologists when performing collections in the field. Additionally, Georgia Aquarium cannot be held accountable for a video, created 13 years ago regarding a different collection of animals, no matter how widely circulated by those opposed to this permit.

D. **Comment.** The application says that the collections occurred only with animals that were already located in shallow waters. This is highly unlikely. Georgia Aquarium must provide video proof of these and other claims about collection methods.

Response. The commenter has no scientific basis or other proof for making a claim that the animals were not collected in shallow water. The commenter also appears to have, no knowledge or understanding of beluga whale behaviors as they relate to the topography of the geographic region in question. To be clear about the assumed allegation in this comment, there was no chasing of beluga whales during the collection. In fact, the vessels deploying the nets are significantly slower than the quantified swimming speeds of beluga whales. Further, the topography of the area where the collection occurred is such that the belugas swim into shallow areas, which is what occurred during the collection of the whales proposed for import. As to the allegation that there is a legal obligation for Georgia Aquarium to provide a video record of the collection, the commenter can point to no such requirement in the MMPA.

E. **Comment.** Belugas are dependent on their mothers for up to two years in the wild, but animals were taken at 1.5 years of age.

Response. The exact date of weaning is specific to an individual animal. Weaning ages for wild odontocetes are determined through varied methods including necropsy and observation, both of which have a very subjective component. Only animals in human care can be observed for definitive termination of when mother-calf dependency ends. Cetaceans such as bottlenose dolphins and beluga whales have been documented eating solid food as early as 4 to 6 months. The Bottlenose Dolphin, Reynolds, Wells, Eide, pg. 99 (attached as Appendix B) (refers to orphaned calf at age one living to reproduce calves of her own in the wild thus demonstrating she was weaned by 12 months herself); The Biology of Marine Mammals, Andersen (edited by), Richard J. Harrison (authored chapter: Reproduction and Reproductive Organs), pg. 295 (attached as Appendix C) (refers to lactation in belugas being from six to eight months). This supports the rationale behind existing statutory policy that animals under the age of eight months should not be collected from the wild. The commenter claims a single point in the development of beluga whales but ignores the realities documented by scientists and veterinarians that care for whales in zoological settings. The commenter also ignores the fact that no animals collected by the Russian experts were seen with other whales that suggested dependency. *See* Part XII(F) below.

F. **Comment.** Georgia Aquarium claims that no beluga whale died during or after collection and none received serious injury. This statement is ambiguous and does not address the possibility that belugas other than the 18 in question may have died or been injured.

Response. As stated previously, Georgia Aquarium staff observed collecting techniques that are consistent with the humane standards set forth by NMFS protocols, and there were no animals lost or injured during any of the steps mentioned in the aforementioned scenarios. Further, all whales subject to this permit application are in excellent health and have remained so during their collection, acclimation, and extended care.

VI. Facility Size

No additional public comments.

VII. Safety

No additional public comments.

VIII. Educational Value of Public Display

A. **Comment.** Georgia Aquarium admitted in an August 8, 2012 *New York Times* article that public display facilities are reluctant to provide information about their animals that is inconsistent with the beliefs of their clients.

Response. The commenter has deliberately taken the quote in question out of context. *The New York Times* article was a story about how various zoos and aquariums address the topic of climate change and its effects on the animals. The reporter sought to understand how Georgia Aquarium, as a leading U.S. aquarium, deals with educating the public on a topic that can be divisive. The actual quote was as follows:

Brian Davis, the vice president for education and training, says to this day his institution ensures its guests will not hear the term global warming. Visitors are “very conservative,” he said. “When they hear certain terms, our guests shut down. We’ve seen it happen.”

The reference and quote was specifically directed at the Aquarium choosing not to use the term “global warming,” while still educating guests on the topic and on the effects of climate change. The ultimate goal is to educate guests on the causes and impacts of climate change without letting the sometimes-controversial term “global warming” become a barrier to achieving that goal. This, in fact, is education. Georgia Aquarium understands that educators have a learning goal in mind, and must know their audience in order to get that audience to understand the concepts being taught.

B. **Comment.** The “educational” information provided by public display facilities is often inaccurate.

Response. The commenter offers nothing to substantiate this statement. With no specific references, it is impossible to address this comment.

C. **Comment.** Marine mammal parks claim they educate the public but this isn’t true – they do not convey real information about longevity, wild behavior and natural habitats to the public.

Response. This statement reflects a clear bias by the commenter. While the commenter has offered no specifics to support this statement, making it impossible to address, Georgia Aquarium and other marine mammal parks strive to educate the public by sharing exactly this sort of information through interpretive materials, in-person narration, student field trips, online materials, lectures open to the public, and published studies and papers.

D. **Comment.** The MMPA requires public display facilities to provide a program of education that meets “professionally recognized standards.” Georgia Aquarium does not meet even minimal criteria applicable to all educational programs and institutions.

Response. At the outset, Georgia Aquarium has been found to meet the education standards required by the MMPA. Furthermore, the commenter appears to be unaware of what constitutes “professionally recognized standards” in the state of Georgia. Each of the Georgia Aquarium education programs is aligned with the official Georgia Performance Standards for educational institutions in the state. Georgia Aquarium utilizes these standards as guidelines in the development of all of its education programs, and these standards are noted in the Aquarium’s education brochures and the website. On the Aquarium’s website, each Georgia Performance Standard met by a particular program is indicated directly below the program description. Many programs satisfy more than one Performance Standard. The Georgia Performance Standards are professionally recognized standards, adopted by the Georgia Department of Education to ensure students learn key components and concepts throughout their K-12 experience. Teachers and students who participate in the Aquarium’s education programs receive educational experiences tied directly to these standards in order to reinforce what teachers address in the classroom for each particular grade level. Aquarium programs are also following the transition format to the Common Core Standards, national curriculum standards that have been adopted by 45 states.

E. **Comment.** Information offered on Georgia Aquarium’s website is one-sided and geared toward biasing the public in favor of captivity. For example, the website only gives reasons why dolphins should be in captivity, and offers no information about their natural lives, intelligence, or behavior.

Response. These claims are unfounded and biased in their own right. The Georgia Aquarium website is a tool for the information and education of its guests and others, specifically with regard to many of the animals in the Aquarium’s living collection. Georgia Aquarium offers fact sheets for many animals in its care, including beluga whales, which are also available on the Aquarium’s website. The goal of providing these fact sheets is to ensure that guests and interested parties around the world can obtain this information. To address the commenter’s specific claim about the representation of dolphins on the website, the website offers sections that provide extensive information about dolphins in the wild, including their physiology and behaviors (for example, there is a five-page downloadable document that relates information about the natural history of dolphins) and other areas which highlight research and conservation efforts related to dolphins. These pages are accessible via multiple portals on the site, designed to appeal to all ages. The following is just one page with this type of information: http://www.georgiaaquarium.org/newsroom/pressKitFiles/BOTTLENOSE_DOLPHIN_FACT_SHEET.pdf. This and other links to valuable information can be found through the sites’ easily-understood navigation, or with a simple search using the term “dolphin facts” on the site.

F. **Comment.** Georgia Aquarium’s education and school outreach are biased toward captivity, and focus solely on animal husbandry and training rather than animal behavior and physiology. This is brain-washing, not education.

Response. This comment is false in every respect. If the commenter were to read the brief summaries of education and school outreach readily available on the Aquarium’s website or in the education brochures, he or she would be forced to acknowledge that any reader receives a clear picture of the fact that the Georgia Aquarium’s education programs offer a comprehensive course of education about aquatic animals, including specific programs which address animals, their physiology and their behaviors in the wild. To illustrate, below are just three sample descriptions from the Georgia Aquarium education brochure and website. These sample descriptions offer important information about these animals and are not “biased” toward captivity.

Undersea Investigators. Have you ever asked yourself why animals behave the way they do? Through research, we can better understand our animals and those in nature. As Undersea Investigators, students will discover how research is conducted while gaining insights into the underwater world.

Georgia Performance Standards addressed: S6CS1, S6CS8, S6CS9, S6E3, ELA6LSV1, M6D1, S7CS1, S7CS5, S7CS8, S7CS9, ELA7LSV1, S7L4, M7D1, M8D4, ELA8LSV1 **Common Core Standards:** 6SP5 & 7SP2 (Teacher Guide)

Sharks In-Depth. Wow, look at all of those teeth! There is much more to learn about sharks than what we see on the surface. During this program, students will examine how sharks impact their environment and how humans impact sharks.

Georgia Performance Standards addressed: S6CS8, S6E4, ELA6LSV1, S7CS5, S7CS8, S7L1, S7L4, ELA7LSV1, S8CS8, S8P3, ELA8SV1, S6CS5, S6CS6 (Teacher Guide)

Snack Attack. Come explore some of the predator-prey relationships found in aquatic ecosystems around the globe. Discover how some of our amazing animals catch their meals and how they keep from becoming a meal (Teacher Guide)

Georgia Performance Standards addressed: S3CS4, S3L1, S3L2, ELA3LSV1, S4CS4, S4L1, S4L2, ELA4LSV1, S5CS4, S5L1, ELA5LSV1

G. **Comment.** Contrary to Georgia Aquarium’s claims, its Beluga & Friends Interactive Program is purely for entertainment and offers no educational value.

Response. This comment was made by an individual who has never participated in this program and who refuses to acknowledge the basic information made available to the public. The Beluga & Friends Interactive Program is a unique and enriching educational experience. Not only is this an opportunity for guests to better understand and care about beluga whales, but the program also incorporates a classroom-style educational overview about belugas, including information about their natural habitats, their physiology, the threats they face in the wild, and conservation efforts on their behalf. Participants have the opportunity for an up-close immersive encounter with these charismatic animals in which a trained staff member further discusses many of the topics addressed in the classroom discussion. The Aquarium’s website clearly explains

the educational session, which all guests in the program participate in, with the following information:

The two-hour program includes a classroom orientation where participants learn about the biology, care, training, and study of this fascinating species and Georgia Aquarium's role in beluga whale conservation.

H. **Comment.** Georgia Aquarium does not utilize valid outcome measures, i.e. testing, to evaluate the impact of its educational programs, instead relying on guest surveys. This is evidence that their education programs do not meet "professionally recognized standards," a requirement under MMPA.

Response. As discussed above, the requirement of adherence to "professionally recognized standards" which the commenter references has been met pursuant to the current NMFS regulations and is further accomplished by Georgia Aquarium's alignment of its education programs with the Georgia Performance Standards for educational institutions in the state. These standards were adopted by the Georgia Department of Education to ensure students learn key components and concepts throughout his or her K-12 experience. Teachers and students who participate in Georgia Aquarium's education programs receive educational experiences tied directly to these standards to reinforce what teachers address in the classroom for each particular grade level. Thus, the tests of learning occur both at the Aquarium and in the classroom.

I. **Comment.** There is no compelling evidence that visiting marine parks like Georgia Aquarium is an authentic educational experience.

Response. This is not true. Multiple studies conducted and papers published in recent years document positive changes in attitude and increased knowledge of the natural world among zoo and aquarium visitors. *See, e.g.,* Bruni, C.M. et al, *The Value of Zoo Experiences for Connecting People with Nature*, 2008 (attached as Appendix D); Clayton, S. et al, *Zoo Experiences: Conversations, Connections, and Concern for Animals*, 2008 (attached as Appendix E); Falk, J., *Impacts of a Visit to a Zoo or Aquarium*, 2006 (attached as Appendix F).

J. **Comment.** Georgia Aquarium has squandered the opportunity to educate the public by using films, display and other experiences for learning without having captive dolphins and whales. Further, Georgia Aquarium does nothing with the cetaceans in its care to educate the public. The Aquarium's dolphin show is a loud, noisy and silly fantasy story featuring no education whatsoever.

Response. This commenter has likely never visited Georgia Aquarium or he or she would know that videos, interpretive displays, and many other types of interpretive media are used to educate and inform guests about the animals on display. These are excellent ways to supplement learning by Aquarium guests about the animals they have seen on display. Moreover, it is disingenuous to suggest that the Aquarium does not strive to educate guests on the cetaceans in its care. Through the multimedia resources previously mentioned, Georgia Aquarium provides guests multiple opportunities for learning which complement the guest's natural curiosity aroused by viewing the animals. Finally, Georgia Aquarium's AT&T Dolphin

Tales is an elaborate production featuring an original storyline and musical score, and showcasing many natural dolphin behaviors. While most certainly a fantasy story, the show underscores and highlights the important connections between marine mammals and humankind and, through a thoughtfully-written score, was created to help guests better understand and care about the fate of these animals. The 30-minute documentary pre-show, which guests in the theater view prior to the live dolphin show, is packed with information about dolphins, and also relays information about Georgia Aquarium's all-important research and conservation efforts in the field. Thus, when combined with interpretive materials found in other areas of the Aquarium, it is clear that guests have numerous opportunities for learning on many levels.

K. Comment. It is not necessary to import these whales for the purpose of public education. The internet now offers instant access to unlimited information, images and videos. Many important subjects for education cannot be corralled or captured but can still be taught. Dinosaurs became extinct millions of years ago but we can still learn about them through other means.

Response. The commenter suggests that any and all meaningful sensory experiences can now be experienced exclusively online. This is like saying there is no longer a need for concerts because we have CD's and electronic music, or that there is no need to travel to a foreign country because we can now watch a travel documentary. It is the philosophy of Georgia Aquarium that the highest and best opportunities for learning about aquatic animals are through public display, which is supported by the Marine Mammal Protection Act. The American public believes this as well, as proven by the results of a 2011 Harris® Interactive poll which indicate that 97% of those surveyed agreed that marine life parks, aquariums and zoos play an important role in educating the public about marine mammals. *See* Appendix A of Georgia Aquarium's October 29, 2012 submission.

L. Comment. Georgia Aquarium puts its beluga whales on display to perform demeaning tricks and uses the animals for the entertainment of its guests, offering an encounter program that costs \$375. This is proof that this application is only about ensuring more money for the Aquarium.

Response. The beluga whales in the care of Georgia Aquarium are not on display to perform for guests. In fact, there is no formal presentation of any kind offered by the Aquarium which fits the arbitrary classification offered by this commenter. As with all of the animals at the Aquarium, beluga whales are displayed for the purposes of public education, learning and enlightenment. The commenter is also unaware of the basic facts about the Aquarium's Beluga & Friends Interactive Program. The program is designed to be an educational and moving experience which enlightens guests about many aspects of beluga whales, including basic physiology, behaviors, dietary habits, and the challenges they face in their natural habitats. The experience is complemented by an in-water session with whales alongside an experienced animal trainer, which most guests in the program have described as a life-changing experience that informs their knowledge and understanding of beluga whales. The cost of that program is \$170, not \$375. The cost of the program covers expenses associated with giving guests this important opportunity, with the remainder of the revenues supporting the Aquarium's 501(c)(3) not-for-profit mission.

IX. Transport

A. **Comment.** There has never been a transfer of cetaceans between containers during a transport, which means this process is experimental and unproven. Research on stress in cetaceans indicates this will pose a significant risk to the animals' health and welfare.

Response. A panel of veterinary and scientific experts reviewed the comments regarding stress. The conclusions of that panel will be submitted in an additional document.

B. **Comment.** Why can't Georgia Aquarium fly 747s into Russia?

Response. The Anapa Airport runway and taxiways cannot accommodate a Boeing 747 aircraft.

C. **Comment.** The 26-30 hour estimate for transport indicated in the application is a gross underestimation, especially given the transport to Texas and California after landing in Atlanta and Chicago.

Response. The transport plan was developed, and times calculated, in consultation with professionally recognized and experienced air transport experts.

D. **Comment.** There are no contingency plans described in the application to overcome delays for mechanical issues or weather.

Response. The comments submitted by Georgia Aquarium on October 29 discuss the contingency plan in detail.

E. **Comment.** The capture, handling, and transport of these animals inflicts stress which elevates the risk of mortality. Each of these activities is a separate event to the animals, and the effects are cumulative and potentially deadly.

Response. A panel of veterinary and scientific experts reviewed the comments regarding stress. The conclusions of that panel will be submitted in an additional document.

F. **Comment.** Beluga whales have died during Russian transports.

Response. The commenter references a report about a Russian transport. However, that transport is not indicative of the type of transport being managed by Georgia Aquarium. The commenter also ignores the large number of successful marine mammal transports done by the Russians.

G. **Comment.** Georgia Aquarium needs to provide information such as the names of the air cargo companies, the fuel/payload range of aircraft, minimum visibility landing requirements, aircraft taxi time at the airports, etc.

Response. Georgia Aquarium will comply with all applicable legal requirements. The information the comment seeks is nowhere found in those requirements. Moreover, much of

the requested information is found in aviation regulations promulgated by U.S. and other national regulatory agencies.

H. **Comment.** Long distance and lengthy transports present special risks to animals. There is a 60 day acclimation period for dolphins after transport during which time stress induced illness and death can occur.

Response. Modern animal transport methodologies utilized by marine mammal experts demonstrate this statement is false. For example, consider the number of successful bottlenose dolphin transports completed by the United States Navy's Marine Mammal Program. The commenter's claim of "60 day acclimation period" may be a reference Dr. Romano's paper (Spoon and Romano 2011, attached as Appendix U to the Georgia Aquarium's October 29 submission to NMFS) that discusses baseline levels for hormones changes after completing cetacean movement from one aquarium to another. What the commenter does not mention is that none of the whales in the study died or succumbed to "special risks."

X. Alternatives

A. **Comment.** Artificial insemination using belugas outside the U.S. is a viable alternative.

Response. As stated in the permit application, MMPA requirements limit the ability of U.S. facilities to import any marine mammal or marine mammal parts without prior knowledge that the acquisition of said marine mammal was compliant with the Act.

Moreover, the commenter ignores the fact that the number of mature males in all U.S. and non-U.S. public display facilities that are conditioned to provide semen under operantly conditioned stimulus control currently totals one. This male, residing at SeaWorld San Diego, is the only male that has provided semen samples of volume and quality to impregnate females. Georgia Aquarium and Kamagowa Sea World are currently the only other marine mammal facilities with a single whale that has sometimes provided semen samples under stimulus control. However, it is critical to note that neither whale has provided ejaculate meeting the quality requirements for use in artificial insemination procedures. Furthermore, even if the aforementioned beluga whale in Japan were providing adequate samples, the single genetic representation would still be far from an alternative to importation when addressing diversity in the U.S. population of whales in human care.

XI. Captive Breeding Program

A. **Comment.** None of the facilities named in the permit application has a successful record of breeding belugas. Georgia Aquarium has struggled to keep belugas as evidenced by the May 2012 death of a calf. Only 50% of Shedd's captive born belugas survive to one year. Mystic has not produced any beluga calves. SeaWorld Orlando has reported only one beluga birth since 1999. SeaWorld San Antonio has had only four calves born since 2000. SeaWorld San Diego has had one successful birth in 2010 following the 2008 death of a calf.

Response. The commenter ignores successes by the public display community, draws misleading conclusions regarding birth rates of beluga whales in human care versus wild populations, and omits statistical data regarding mean and median lifespan. As included in the applicant's permit, beluga whales live as long as those found in wild populations (Willis, 2011). The successful birth and raising of 18 beluga whales in human care is clearly a demonstration of successes archived by marine mammal facilities with these cetaceans.

B. Comment. The number of deaths of beluga whales in captivity exceeds the number of births, proving the program is a failure. A representative of Georgia Aquarium was quoted as saying "...only two males have contributed to the artificial insemination efforts carried on throughout the country" and "importing additional animals will make for greater success at breeding efforts." Because breeding is proven to be unsuccessful, even more belugas beyond these 18 will have to be caught if breeding efforts are to continue.

Response. Breeding has not been "proven to be unsuccessful" given that there are currently 18 living animals born at public display facilities in the U.S., three in Asia, and 14 in Canada. Further, the commenter speaks to a ratio that is not applicable to breeding pairs resulting in births. Moreover, the quotation noted by the commenter was written by a reporter in a U.S. media publication and was not accurate. The Georgia Aquarium official was responding to a question regarding how many male beluga whales in the United States are conditioned for semen collection. The reply included the current status of only one whale providing the volume and quality of sperm that can be used in artificial insemination procedures. Finally, the commenter's conclusion is not based on scientific merit or scientific modeling calculations.

XII. Impact of Collections on the Wild Population

A. Comment. Georgia Aquarium implies that because the collections have already occurred, the import would not directly result in effects on the population in the Sakhalin-Amur region. This is false reasoning.

Response. The collection of the 18 beluga whales has already occurred. The average annual number of all whales collected (22) is below the PBR (30).

B. Comment. Issuing this permit would make the U.S. party to an inhumane and unsustainable trade that sends young belugas to countries that have no expertise in maintaining captive whales.

Response. The MMPA authorizes the importation of marine mammals into the U.S. The U.S. has no control over whether the Russian Federation will allow the collection of beluga whales or the export of beluga whales to other countries.

C. Comment. Scientific studies show that specific individuals can be extremely important to group cohesion in delphinids and their removal may prove highly disruptive to social groups. It is plausible the same can occur regarding monodontids.

Response. The commenters attempt to support their statement of social disruption with three publications. One of these publications, Wade et al. (2012), attached as Appendix G,

is also discussed in detail in Part XII(K) of this document. One premise of Wade et al. was that Odontocetes (toothed whales) are highly social and that the social communities are controlled by a few dominant individuals and, therefore, the loss of those individuals may fracture social structures and reduce associated life history traits such as fecundity. They suggest that Odontocetes are less resilient than Mysticetes (baleen whales) to overexploitation because their survival and reproduction may be more dependent on social cohesion. However, Wade et al. clearly state that “the data summarised in this paper are only suggestive and that firm conclusions linking social and behavioural factors to nonrecovery or compromised recovery of odontocete populations would be premature.” Wade et al. also state that the examples provided concern the loss of older individuals, especially matriarchs. Since 17 of the 18 whales considered for import into the U.S. were 1.5 to 5.5 years of age at the time of capture (and the 18th was only 9.5 years old), none of these whales would have been major contributors to the Sakhalin-Amur social cohesion.

The other cited publications are a paper by David Lusseau and M.E.J. Newman entitled *Identifying the Role that Individual Animals Play in Their Social Network*, published in *Ecology Letters* in 2004 (attached as Appendix H) and a paper by Rob Williams and David Lusseau entitled *A Killer Whale Social Network is Vulnerable to Targeted Removals*, published in *Biology Letters* in 2006 (attached as Appendix I). The premise of the Lusseau and Newman (2004) publication, is that key individuals may be responsible for subgroup cohesion in a community of 62 bottlenose dolphins (*Tursiops*) in New Zealand. The paper showed that certain individuals, called brokers, associated strongly with members of two (or more) sub-communities, and may be responsible for the cohesion of the subgroups into a single super-group (community). It is possible that these brokers are related to individuals in more than one group and serve as a liaison keeping the multiple groups united. In one example, the authors found that the disappearance of one individual in particular led to the fracturing of a single group into two separate subgroups and then found the groups reunited when the individual later reappeared. The implication is that the loss of just a few key individuals can fracture the whole community social structure. However, the authors considered their results cautiously tentative largely because they also found that there were redundant paths of communication within the dolphin community (other dolphins stepped in as brokers), and the community was quite robust with respect to the loss of one individual (it may take the loss of more than a few individuals to fracture the community). The paper also did not identify the age of the broker animals. There is no evidence from this paper that the removal of a few young individuals in a large beluga population would elicit a group fracture.

The third paper by Williams and Lusseau (2006) (attached as Appendix I), models the potential effect of removing 10 killer whales on the social network of a population of 81 killer whales. Curiously, the authors concluded that the random removal of the ten individuals was unlikely to result in fragmentation of the social network, while a removal of ten animals for live capture would cause fragmentation. The “live-capture” scenario included the removal of ten animals, four females and two males aged 4 to 10 years and two females and two males aged 10 to 20 years. Furthermore, it is not clear from this paper just how this study relates to the juvenile belugas collected in the Sea of Okhotsk that are the subject of the permit application. In that regard, it should be noted that the removal of ten killer whales represents over 12 percent of the population, yet under the random scenario there was no fracturing of the social network.

Compare that to the beluga whale capture in Sakhalin Bay where the removal represents less than 0.6 percent of the local population.

D. Comment. The genetic studies funded by Georgia Aquarium were based on an inadequate sample size that repeatedly sampled the same animals and this undermines any conclusions on stock mixing.

Response. This comment does not consider the actual work that was done. Meschersky and Yazykova (2012) identified duplicate samples and deleted them from the genetic analysis. This resulted in the genetic analyses by Meschersky and Yazykova (2012) and Cronin (2012) with sample sizes for microsatellites of 37 in Chkalova, 77 in Udskeya Bay, 8 in Nikolaya Bay, 63 in Ulbansky Bay, and 26 in Tugursky Bay. Sample sizes for mtDNA were similar in each area. Except for Nikolaya Bay, these are adequate sample sizes for population genetic comparisons. The sample of 8 for Nikolaya Bay is not ideal, but is the best available information. See the discussion in Part XII(S) below regarding the evidence for the mixing of whales among the five summering areas.

E. Comment. The IUCN Panel noted that “the sustainability of removals from [the Sakhalin-Amur region] does not depend on whether there is interbreeding, or mixing, outside of the season when belugas are captured,” a point the Applicant mostly ignored in the permit application. What is relevant for the live capture operation is the strong site fidelity females show during the feeding/capture season. These smaller, distinct summer feeding aggregations are susceptible to overexploitation. As noted by the Panel, “if belugas were extirpated from [the region where captures occur], it would likely not be recolonised for a considerable time (at least decades)” and “capture operations long continued at one or two favoured sites where captures are easy and safe might deplete a local, but thus far unrecognised, community.”

Response. The first part of the comment refers to whether the Shantar and Sakhalin-Amur populations can be combined into a single stock resulting in a larger PBR. The IUCN panel essentially stated that mitochondrial DNA haplotype differences can be used to identify stocks even if nuclear DNA does not show differences. However, this is part of an ongoing scientific debate about the proper basis for stock identify. In that regard, the movement of belugas among the summering areas, documented with telemetry data (Shpak 2011), supports the nuclear DNA data showing that belugas move among the different summering areas and constitute one stock. Regardless, the IUCN panel calculated a PBR of 29 based on the Sakhalin-Amur population alone. That number is higher than the average annual live-capture take of 22 animals. The IUCN also noted that by properly pooling certain data the PBR could be higher. That computation was done, resulting in a PBR of 30.

The second part of the comment suggests that the population of belugas that are the subject of the permit application represents a much smaller subpopulation of the Sakhalin-Amur population and that this smaller subpopulation would be susceptible to extirpation from collection and removal. However, the commenter offers no support for the claim that the Sakhalin-Amur group can be further subdivided and the IUCN Panel made no such finding. The comment also ignores the satellite tracking data that show individuals captured at Chkalov and Baydukov Islands travel the entire 70-mile breadth of the Sakhalin-Amur beluga range (Chkalov

Island to Baikal Bay including Zotov Bank and Amur Estuary). *See* Appendix 1 of Shpak [2011], attached as Appendix J. The satellite tracking data indicating that the entire Sakhalin-Amur population migrates past Chkalov and Baydukov Islands, show that the individuals collecting beluga whales could have removed animals from the entire population, not any specific local group.

F. **Comment.** Because younger females were collected, the collection had a disproportionate impact on the population because younger females have a higher average reproductive value.

Response. This comment assumes there is an “impact” on the population and implies that reproduction is limiting the number of whales in the population. The commenter presents no data showing that reproduction is lower in the population after the whales were collected. Furthermore, of the ten female beluga whales collected for import, nine were 5.5 years of age or lower, and the tenth was 9.5 years of age, at the time of capture. Suydam (2009) (attached as Appendix K), examined the reproductive status of 87 female belugas harvested in Alaska and determined that the average age at first birth was 8.27 years. Previous lower ages at first birth were based on the assumption of two dentinal growth layer groups per year, which has subsequently been found to be incorrect. Stewart et al. 2006 (attached as Appendix L). Belugas deposit only one growth layer group per year. Thus, 90 percent of the 10 females collected were probably not sexually mature at time of collection and, therefore, not able to contribute to the annual reproduction. The tenth female, while possibly sexually mature, was neither with calf or pregnant and, therefore, had not yet contributed to reproduction.

G. **Comment.** Beluga whales are “skittish” during collection because they are chased prior to collection.

Response. The beluga whales proposed for importation were not chased prior to collection. The animals swam voluntarily into shallow water where the collection could occur. Furthermore, the commenter’s generalized statement regarding negative behavioral effects from biopsy collections on beluga whales is without merit. Georgia Aquarium staff and other experienced scientists have observed and recorded cetaceans showing no response or returning within close proximity to research vessels immediately following data collection. Additionally, permitted capture and release dolphins have been photographed “bow riding” immediately following physical examinations completed aboard ship (Hurley, personal comm.).

H. **Comment.** The 2012 quota for collecting beluga whales from the entire Sea of Okhotsk was 200 and 150 are allowed to be taken from the sub-region known as the Northern Okhotsk subzone where the 18 belugas were captured. Overall, the annual quota for capturing beluga whales in all waters subject to Russian jurisdiction is 1,000.

Response. The collection of the 18 beluga whales subject to the permit application occurred in the southern Sea of Okhotsk. Collections from different populations in different geographic areas are not relevant to this permit application.

I. **Comment.** The Scientific Committee of the IWC concluded in 1999 that only four of 29 beluga populations in the world were stable and no new information has been produced to change this conclusion.

Response. Of the 29 populations, four were classified by IWC (2000) as “stable” and four as “stable?”. Although the question mark does suggest some uncertainty, it does not suggest “depleted” or status “unknown” as listed for the other populations. The four “stable” populations are the subsistence harvested beluga populations in Alaska, and three of the four “stable?” populations are the three occurring in the Sea of Okhotsk. The fourth “stable?” population is the subsistence-harvested West Hudson Bay population. It should also be noted that the IWC report (attached as Appendix M), recognized live captures were occurring from the Sakhalin-Amur population, but listed only petroleum development as a potential threat to the population.

J. **Comment.** The 1998 Resolution on Directed Takes of White Whales adopted by the IWC (Res. 1998-9) expressed concern that directed takes might not be sustainable. In 2001, the IWC passed a Resolution on Small Cetaceans (IWC 53/47) that noted the depleted or unknown status of many beluga stocks and supported the 1999 recommendation of the IWC Scientific Committee that range states continue stock assessments.

Response. The exact text of the 2001 resolution (<http://eelink.net/~asilwildlife/53IWC.html>) was “SUPPORTS the recommendations of the Scientific Committee in 1999 that beluga range states continue studies to resolve the structure of beluga stocks, conduct contaminant analysis and health assessments, and provide relevant scientific data to the Scientific Committee.” The resolution does not address specific beluga stocks or populations. Finally, the stock assessment research on beluga whales in the Sea of Okhotsk funded by Georgia Aquarium and others responds to the call for more stock assessment work and provides the data lacking 14 years ago.

K. **Comment.** Recent research reveals that odontocete populations can be over-exploited with take rates of only a few percent per year, where exploitation can have effects beyond the dynamics of individual removals because of the highly social nature of these populations and the social cohesion and intergenerational transfer of knowledge, requiring more precautionary management.

Response. The paper referred to is by Paul Wade, Randall Reeves, and Sarah Mesnick, published in mid-2012 in the Journal of Marine Biology. The referenced paper is attached as Appendix G. The premise of the paper is that overexploited populations of odontocetes may be less resilient to recovery than mysticetes because of their more social organization. However, the paper states: “We are the first to admit that the data summarized in this paper are only suggestive and that firm conclusions linking social and behavioral factors to non-recovery or compromised recovery of odontocete populations would be premature.” Further, the premise of the paper needs be placed in context with the beluga whale collections within the southern Sea of Okhotsk. When Wade et al. referred to overexploitation of beluga populations, they were referring to commercial ventures undertaken with little regard to sustainability, unrestricted killing through bounty systems (St. Lawrence River stock), or recent subsistence harvests that greatly exceeded sustainability (Cook Inlet stock). For example, the

dramatic decline of the Cook Inlet stock was due to an unprecedented average annual harvest of 14 percent over a three-year period. NMFS 2008, attached as Appendix N.

When Wade et al. stated that “their relatively low population potential rates of increase mean that odontocete populations can be over-exploited with take rates of only a few percent per year” they were suggesting that once an odontocete population was dramatically reduced, it took relatively little continued harvest to keep it suppressed. The St. Lawrence and Cook Inlet populations have not been harvested for some time. Thus, the slow recovery of these populations is likely due to continuing impacts from the original exploitation or other factors that are keeping these populations from quick recovery. Further, the “few percent per year” is not quantified. Wade et al. discusses sustainable harvest rates that have been proposed in the past at between 3 and 10 percent. Where these harvest rates pertain to stocks that are not recovering, the implication is that even a 3 percent harvest rate prevents recovery of an over-exploited population.

In contrast, the average annual live capture rate of belugas in Sakhalin Bay is 0.6 percent based on an average annual removal of 22 whales and a very conservative population estimate of 3,547 animals for the Sakhalin-Amur population. If the same correction factors used by NMFS for Alaskan beluga populations were applied to the Sakhalin-Amur population estimate, the annual removal rate would be 0.3 percent. Assuming further that the Shantar and Sakhalin-Amur populations comprise a single stock, the annual stock removal rate would approach 0.1 percent. None of these values are in the “few percent per year” category. In fact, Wade et al. noted that the Bristol Bay stock in Alaska grew at an annual rate of 5 percent between 1993 and 2005, while the annual subsistence harvest rate ranged between 0.7 and 1.2 percent. This fact suggests that the Sakhalin-Amur aggregation should continue to recover from any past commercial exploitation with an annual removal rate of less than 1 percent.

Wade et al. also identified several possible mechanisms by which direct exploitation can affect population recovery of odontocetes. All those that could apply to belugas (*e.g.*, loss of cultural knowledge) relate to the harvest of older-age females. Only young belugas of both sexes were collected in Sakhalin Bay. The loss of these whales would not contribute to the mechanisms identified by Wade et al.

L. **Comment.** In the collection of the 18 whales, individual whales are captured and released. This causes a temporary disturbance that may have long-term consequences if the same whales are repeatedly captured.

Response. This comment implies that the same whales are repeatedly captured or that virtually any capture and release has long-term population level impacts. However, the results of the satellite tagging studies conducted on the Sakhalin-Amur beluga population by Dr. Olga Shpak and others indicate the whales collected at Chkalov and Baydukov Islands move across the entire 70-mile breadth (Chkalov Island to Baikal Bay) of the Sakhalin-Amur area (Shpak 2011, Appendix 1), and that the entire population appears to migrate past Chkalov and Baydukov Islands. Thus, all animals in the entire Sakhalin-Amur population may be available for collection, not just a few local individuals. As the collection methodology targets groups of whales of 5 or less, mathematically there would be hundreds of small groups to choose from over the collection season. A group of 5 is approximately 1/700th of the most conservative Sakhalin-

Amur population estimate. The likelihood that the same whales would be repeatedly captured is very remote.

As to the long-term consequences of a whale being captured once or twice, the capture (and sometime recapture) and fitting with radio/satellite tags of belugas is a standard research technique used by NMFS and other government agencies. The invaluable data collected from these studies would be placed at risk should there be a valid concern that these captures were impacting the individuals or the population in general. Based on the low likelihood of repeat capture and on the standardization of the collection methods used, the disturbance effects of capture and release on the population remains inconsequential.

M. Comment. The Red Data Book of the Russian Federation lists beluga whales as category 3, Rare.

Response. The Red Data Book of the Russian Federation (http://2mn.org/engl/mammals_e.htm#китообр) does not list any category for beluga whales. It lists narwhals as category 3, Rare, but not belugas.

N. Comment. The IUCN established a PBR of 30 and this number has been exceeded in some years.

Response. The IUCN Panel used a more conservative methodology for calculating the population level of Sea of Okhotsk beluga whales than that used by NMFS in managing Alaska beluga populations. NMFS and the IUCN Panel employ different correction factors for beluga whales that were below the surface at the time of the survey and, therefore, not counted. If NMFS applies the correction factors used in calculating the beluga whale population in Alaska to the beluga whale population in the Sea of Okhotsk, then the PBR for the Sakhalin-Amur aggregation would be 46 (not the 30 stated by IUCN) and the PBR for a combined Sakhalin-Amur/Shantar aggregation would be approximately 133. It should also be noted that NMFS employs a five year average in determining take levels for PBR purposes. Moore and Merrick, (2011) (attached as Appendix O); Allen and Angliss (2012), attached to the Georgia Aquarium October 29, 2012 submission as Appendix A to Exhibit 13.

O. Comment. NMFS must acknowledge the capture and trade of belugas to supply international and U.S. demand as part of its analysis of cumulative impact of granting the permit. It is the demand from international public display facilities that is responsible for potentially unsustainable captures of small whales and dolphins all over the world. Because the belugas have already been captured from the wild does not remove the responsibility incumbent upon NMFS to implement domestic policy that encourages international conservation of marine mammals. NMFS is required to consider cumulative impacts. This would include the past and future capture operations in the Sea of Okhotsk. To not acknowledge the capture and trade of belugas to supply international and US demand would be willful negligence on the part of NMFS.

Response. The following response assumes for the sake of argument only that the MMPA and NEPA have extraterritorial application. That said, to be meaningful, a cumulative impact analysis in a NEPA document must include practical limits on how far reaching in space

and time the considerations of the proposed action's impacts must be. Environmental effects should be determined from the perspective of the proposed action. A first step is the identification of potential direct and indirect impacts of the proposed action. Thereafter, other actions that have the potential to affect the same resources as those affected by the proposed action can be evaluated. Actions that do not affect the same resource(s) as the proposed action do not need to be considered.

The proposed action is the import of beluga whales from a specific and discrete stock. As discussed in the EA, the proposed action's potential effects are limited to this discrete stock. The proposed action does not affect other beluga whale stocks or other marine mammal species. The proposed action does not have a measureable effect on the U.S. or international demand for beluga whales and other marine mammals. Therefore, the consideration of the proposed action's incremental contribution to potential impacts on marine mammals at an international level—as the commenter appears to be advocating—would not constitute a practical, appropriate, or meaningful analysis and is not required by NEPA. Likewise, the cumulative impact analysis need not consider the proposed action's cumulative effect on international and U.S. demand for beluga whales of unspecified stocks beyond how the proposed action may affect the demand for beluga whales specifically from the Sakhalin-Amur stock. As described in the EA, the collection rate of beluga whales from the Sakhalin-Amur stock is not expected to be affected by the proposed action.

Because NEPA requires that other past, present, and reasonably foreseeable actions that have the potential to affect the same resource(s) as those affected by the proposed action (*i.e.*, the same stock of beluga whales) should be considered in a cumulative impact analysis, the consideration of other actions that would affect marine mammals at an international level is not required nor is it meaningful for a complete NEPA analysis unless it can be demonstrated that the action would also affect the Sakhalin-Amur stock. Any cumulative impact analysis for the proposed action should be limited to an evaluation of other actions that would affect the same stock of beluga whales as the proposed action. In the EA, NMFS has identified other actions that could result in impacts on the Sakhalin-Amur beluga whale stocks. This includes the present and reasonably foreseeable takes that were determined not to contribute to collectively significant impacts on this stock of beluga whales.

Based on NEPA requirements promulgated in 40 C.F.R. §1508.7 and guidance issued by the Council on Environmental Quality, the EA has adequately considered the potential cumulative impacts of the proposed action. Expanding the analysis to include the proposed action's potential cumulative effects on the capture of beluga whales to supply any U.S. and international demand is not required, nor would it be meaningful or realistic in light of the actual scope of potential impacts of the proposed action.

P. Comment. Utrish Dolpinarium Ltd. has been linked with exporting wild-caught Black Sea dolphins overseas, a practice that became illegal in 2002.

Response. The commenter offers no evidentiary support for the allegation which, even if true, has nothing to do with the subject of this permit application.

Q. Comment. The capture of belugas would not be tolerated in U.S. waters under the MMPA. This is reason enough to deny the permit.

Response. The MMPA permits the taking of marine mammals from U.S. waters. Any such application would be evaluated on its merits.

R. Comment. Beluga whales are threatened worldwide by climate change, oil and gas development, shipping traffic, pollution etc.

Response. Some beluga whale populations are potentially threatened by the above stressors, but not all populations are threatened by all stressors. The generalized statement by the commenter does not address the southern Sea of Okhotsk populations at issue. Further, belugas are not threatened worldwide. For example, they are managed in Alaska for subsistence harvests.

S. Comment. The claim that the Sakhalin-Amur and Shantar stocks mix throughout the year is based primarily on an analysis in which only one Shantar aggregation (in Nikolaya Bay) appears similar enough in its mtDNA to the Sakhalin-Amur whales to suggest year-round mixing. But only 8 whales were sampled in Nikolaya Bay and that is an inadequate sample size.

Response. The commenter is incorrect in stating the evidence for mixing of whales in the five summering areas is primarily based on the comparisons of Shakhalin Bay with Nikolaya Bay for the following reasons.

1. Regarding sample size, Meschersky and Yazykova (2012) used the available samples and acknowledged the sample size of 8 for Nikolaya was small. However, these samples provide the only available genetic information on whales in this summering area and should not be ignored. The issue of sample size is further discussed in Part XII(D) above.

2. The conclusion that whales in the five summering areas mixed and constitute one genetic stock was supported by the following.

- a. Microsatellite DNA shows the mixing of the populations. As stated by the conclusion of Meschersky and Yazykova (2012) page 10: “All samples belong to a single population, probably subdivided into dems (*sic*) but *not into summering areas*” (emphasis added); and Cronin (2012): “The data for 19 microsatellite loci ... indicate that the beluga whales in the five areas of the Shantar and Sakhalin regions ... belong to one genetically homogeneous stock.”

- b. MtDNA data shows the whales in the Sakhalin and Shantar areas are not definitively differentiated and that the most common haplotype occurs in whales in all five summering areas (Cronin 2012). This analysis showed areas in Shantar other than Nikolaya had positive N_{em} values indicating some level of female mediated gene flow over time.

- c. Telemetry data shows the same females in different summering areas in the Shantar and Sakhalin areas. As stated by Shpak 2011:

“In July 2009, during boat survey in Nikolaya Bay (Shantar region), we observed two previously tagged belugas (Pic. 9) ... *it is difficult to overestimate the importance of this “re-sighting.”* First, we found out that the animals were alive and looked healthy; second, we obtained the new information on Sakhalin-Amur beluga summer movements: belugas tagged in Sakhalinsky Bay visit Shantar region (or at least its Eastern part) not only in autumn, but also in summer time.... Based on our satellite tracking data, the following conclusions can be made so far: *Belugas from Sakhalin-Amur and Shantar summer aggregations share some habitat in common and are not isolated from each other throughout the year.”*

(Emphasis added.)

d. One would have to ignore the majority of the genetic data to conclude that the whales in the five summering areas are significantly genetically differentiated. One would also have to ignore the telemetry data to conclude the belugas do not move among the summering areas.

Georgia Aquarium Response to Comments

Index of Appendices and Exhibits

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Appendix

- A Facilities Noise Measurement Report: Noise Characterization of Beluga and Dolphin Habitats (by the Georgia Aquarium)
- B Reynolds, J.E., R.S. Wells, and S.D. Eide. 2000. Life History Strategies *In* “The Bottlenose Dolphin: biology and conservation” University Press of Florida.
- C Harrison, R.J. 1969. Chapter 8; Reproduction and Reproductive Organs *In* “The Biology of Marine Mammals” (H.T. Anderson, ed.), Academic Press, New York.
- D Bruni, C.M., J. Fraser, and P.W. Schultz. 2008. The Value of Zoo Experiences for Connecting People with Nature, *Visitor Studies*, 11:2, 139-150.
- E Clayton, S., J. Fraser, and C.D. Saunders. 2009. Zoo Experiences: Conversations, Connections, and Concern for Animals. *Zoo Biology* 28, 377-397 .
- F Falk, J. Impacts of a Visit to a Zoo or Aquarium, source unknown.
- G Wade, P.R., R.R. Reeves, and S.L. Mesnick. 2012. Social and Behavioural Factors in Cetacean Responses to Overexploitation: Are Odontocetes Less “Resilient” Than Mysticetes? *Journal of Marine Biology*, Volume 2012, Article ID 567276.
- H Lusseau, D. and M.E.J. Newman. 2004. Identifying the role that individual animals play in their social network. *Proc. R. Soc. London B (Suppl.)* 271, S477-S481.
- I Williams, R. and D. Lusseau. 2006. A killer whale social network is vulnerable to targeted removals. *Biol. Lett.* vol. 2 no. 4 497-500.
- J Shpak, O., I. Meschersky, R. Hobbs, R. Andrews, D. Glazov, N. Chelintsev, D. Kuznetsova, B. Solovyev, E. Nazarenko, R. Michaud, and L. Mukhametov. 2011. Current status of the Sakhalin–Amur beluga aggregation (The Okhotsk Sea, Russia): sustainability assessment. Report for 2007-2010 stages: Results of 4 years of study and preliminary conclusions. Report to IUCN Independent Scientific Review Panel for a meeting in Chicago, USA, 6-7 March 2011.
- K Suydam, R.S. 2009. Age, growth, reproduction, and movement of beluga whales (*Delphinapterus leucas*) from the eastern Chukchi Sea. Dissertation. University of Washington, School of Aquatic and Fisheries Sciences.

- L Stewart, R.E.A., S.E. Campana, C.M. Jones, and B.E. Stewart. 2006. Bomb radiocarbon dating calibrates beluga (*Delpinapterus leucas*) age estimates. *Can. J. Zool.* 84, 1840-1852
- M IWC. 2000. Annex I: Report of the Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage.* 2(Suppl.)
- N National Marine Fisheries Service. 2008. Conservation Plan for the Cook Inlet beluga whale (*Delpinapterus leucas*). National Marine Fisheries Service, Juneau, Alaska.
- O Moore, J.E., and R. Merrick, editors. 2011. Guidelines for Assessing Marine Mammal Stocks: report of the GAMMS III Workshop, February 15 – 18, 2011, La Jolla, California. Dept. of Commerce, NOAA Technical Memorandum NMFS-OPR-47.



February 11, 2013

Mr. Michael Payne
Permits and Documentation Division Chief
Office of Protected Resources
National Oceanic and Atmospheric Administration
United States Department of Commerce
Silver Spring Metro Center 3
1315 East-West Highway, Room 13822
Silver Spring, MD 20910

RE: File No. 17324

Dear Mike:

I am submitting for your review two items as a further response to comments filed by members of the public on the Georgia Aquarium application for a permit to import 18 beluga whales from Russia. The first item, attached as Exhibit 1, responds to certain comments regarding stress and transport. The material attached to my January 8, 2013 submission to the agency indicated we would be providing this information as soon as a panel of experts reviewed the assertions made by certain commenters. I am pleased to provide you with this additional information for your consideration as part of the record.

The second item included for your review, attached as Exhibit 2, is the results of an unannounced inspection of Marineland of Canada. Several commenters stated the animals living at that facility were in need of medical rescue. The attached Exhibit 2 indicates that is not the case.

If you have any questions, or would like to discuss this or any other matter, please feel free to contact me.

Sincerely,

William C. Hurley IV

Enclosures

Analysis from Scientific Experts of Comments Regarding the Georgia Aquarium Beluga Importation Permit Application

Comments submitted by the Humane Society of the U.S. (“HSUS”), Whale and Dolphin Conservation Society (“WDCS”), and George Washington University (“GWU”) Law Students and Faculty (collectively the “Commenters”) regarding the Georgia Aquarium application to import beluga whales claim the permit should not be approved because the transport, including noise inside the aircraft, causes stress. Commenters then assert such stress is inhumane and causes health problems.

There are two central problems with the Commenters’ presentation. The first problem is that to sustain a claim of inhumane treatment there must be some standard against which to assert that noise or stress levels above that standard are inhumane or cause health problems compromising the ability of the animal to survive. No such standard exists and Commenters point to none. In fact, stress is a normal physiological body function and living organisms have innate and well-documented mechanisms for dealing with stress. In the context of the pending permit application, it is a given that stress may be associated with collection and transport. However, all living creatures experience stress and, as already noted, have normal physiological mechanisms to deal with stress. Commenters have drawn conclusions as to the health and/or survivability consequences of stress for which there is no support in the scientific literature.

This leads to the second fundamental problem with the Commenters’ presentation. None of the various scientific publications cited by Commenters support Commenters’ claims. The cited publications were authored by well-respected researchers. However, instead of relying on the actual data and conclusions in the reports, Commenters have chosen to take statements out of context or to rely on the conjecture or speculation of the researchers that appears in the introduction or discussion sections of the publications but are not contained in

the results or conclusion sections where the study's actual findings are presented. Thus, Commenters are relying on statements the researchers acknowledge are not supported by the actual data. As discussed below, none of the papers cited by Commenters provide any data that can be used to establish a threshold of inhumaneness or that establish the causal standard above which health and survivability issues exist.

Veterinarians who are members of the Alliance of Marine Mammal Parks and Aquariums ("AMMPA") Veterinary Advisory Committee as well as other experts reviewed the publications relied on by Commenters. The reviewers' findings presented below demonstrate that the Commenters have relied, not on the actual data, but instead on subjective opinions, personal comments, and outright speculation of the authors of the referenced publication. In all cases, the publication's analytical data do not support the Commenters' statements. The findings by the expert reviewers appear below, categorized by the broad assertions from the Commenters. A list of the reviewers and their professional qualifications is attached as Appendix A. The reviewers included Eric D. Jensen, D.V.M.; James F. McBain, D.V.M.; Caryn P. Poll, D.V.M.; Sam H. Ridgway, D.V.M. Ph.D.; Todd L. Schmitt, D.V.M.; Jay C. Sweeney, V.M.D.; and Kevin B. Willis, M.S.

A. Subject Category: Stress and Thyroid Impact Statements

Statement 1: GWU Law Students and Faculty, HSUS, WDCS

Stress can lead to immunosuppression and susceptibility to disease, including disease in cetaceans.

Studies cited by the Commenters:

1. Noda K., H. Akiyoshi, M. Aorki, T. Shimada, and F. Ohashi, 2007, Relationship between transportation stress and polymorphonuclear functions in bottlenose dolphins (*Tursiops truncatus*), *Journal of Veterinary Medical Science* 69: 379-383, attached as Appendix B;
2. St. Aubin, D.J. and L.A. Dierauf, 2001, Stress and marine mammals, in *CRC Handbook of Marine Medicine*, 2nd edition, CRC Press LLC, Boca Raton (L.A. Dierauf and F.M.D. Gulland, eds.), pp. 253-265, attached as Appendix C;

3. D.J. St. Aubin and J.R. Geraci, Capture and Handling Stress Suppresses Circulating Levels of Thyroxine (T4) and Triiodothyronine (T3) in Beluga Whales *Delphinapterus leucas*, 61 *PHYSIOL. ZOOL.* 170–75 (1988), attached as Appendix D; and
4. Spoon, T.R. and T.A. Romano, 2011, Neuroimmunological response of beluga whales (*Delphinapterus leucas*) to translocation and a novel social environment, *Brain, Behavior and Immunity* 26:122-131, attached as Appendix E.

Response to #1:

1. Review of Noda et al. 2007 (*Journal of Veterinary Medical Science* 69; 379-383).

The statement cited by Commenters was the question to be investigated in the study. It was not a conclusion of the research. Noda et al. examined the physiologic changes associated with the handling and transport of bottlenose dolphins. Contrary to Commenters' presentation, what Noda et al. concluded was that "the overall effect of these changes on the immunocompetence of transported dolphins is unclear." Indeed, the authors' conclusion was: "We must complete further research.... Then we can discuss whether the dolphin has increased susceptibility for infectious diseases after transportation...." Equally important, there was no mention of any health issues arising from the transport of the dolphins that were part of the study.

2. Review of St. Aubin and Dierauf, 2001 (*Stress and marine mammals*; In *CRC Handbook of Marine Medicine*, 2nd edition; CRC Press LLC, Boca Raton; pp. 253-265).

- a. There are several statements by the authors of the cited chapter that put Commenters' assertions into a different perspective. Those statements follow.

- i. In considering marine mammal responses to stress, the authors opined: "It might even be argued that periodic activation of the stress response is beneficial to maintaining health the same way that physically demanding exercise promotes fitness."
- ii. With respect to any stress that animals in human care may experience, the authors noted by way of comparison: "In the wild,

marine mammals encounter natural stressors daily.” Indeed, if stress were not a naturally occurring condition, there would be no need for animals to have such complex systems to deal with it.

iii. “Overall, the elevations in cortisol (in dolphins with capture and handling induced stress) were modest....” In fact, the paper goes on to cite with approval the conclusion in Rushen 1986 that “[i]t is misleading to use the degree of corticosteroid elevation as a direct measure of the intensity of the stressor.”

iv. “In virtually every clinical situation, stress and its consequences must be addressed, since disease itself is a stressor, and stress may be at the root of the illness in question.” However, emphasizing the words “may be” in the previous sentence, the authors state that stress is a term that is too often applied indiscriminately as a convenient “catch-all when efforts to reach some other diagnosis fall short.” Thus, the authors note that “a state of distress” can result from “uncontrolled, excessive, and prolonged” stress but that “[d]istress is not always deleterious, although it is unpleasant and uncomfortable.”

b. The point of this chapter by St. Aubin and Dierauf is that it is better to acknowledge the presence of stress as a normal consequence of life and to understand its potential consequences. To understand stress is to be better equipped to control, minimize, or eliminate its potential to cause harm. For example, animals may be frightened and stressed by fireworks. However, they can often be conditioned to actually recognize fireworks as a signal for positive or desirable events like food reward,

access to a desirable area, or other forms of reward. In a human context, being delayed for an important meeting by unexpected and heavy traffic is stressful and causes a multitude of stress response changes intended by Mother Nature to be protective. You would, however, be unlikely to become sick and die. Thus, the authors recognize that stress always exists at some level, and we need to understand and address it. The authors of this chapter do not conclude that stress causes immunosuppression and disease although they recognize acute stress can have such effects. Acute stress can exacerbate pre-existing clinical disease. Where clinical disease exists, it will already be functioning as a stressor so the addition of an acute stressor can damage the animal's ability to combat the pre-existing disease. Similarly, subclinical disease may be held in check by the immune system. A temporary suppression of the immune system may allow that pre-existing condition to gain momentum and become clinical disease. It is theoretically possible, but not likely, that the transport of a cetacean could be the acute stressor to cause this to happen. In the case of whales in the wild, an acute stressor could be a naturally occurring event such as pregnancy, parasitism, or social conflict. Understanding that these kinds of situations can occur, it is usually accepted that chronic stress is the condition that can be associated with immunosuppression and increased susceptibility to disease. That said, while chronic stress can increase the potential for disease, that outcome is not a given. For example, many humans live for years with chronic stress but do not suffer significant disease or death.

3. Review of Spoon and Romano, 2001.

- a. This paper supports the need to investigate and understand the various interacting factors affecting health that are associated with transport and post transport acclimation. What the paper actually concludes is that there is insufficient data to make conclusions, as the Commenters do, and that we need more data before definitive conclusions can be reached.
- b. The paper uses livestock transport as an example of stress in transport. The paper states: “Livestock managers have known for decades that transport stress often exacerbates the incidence of disease and mortality.” However, livestock transport is not a suitable comparison for cetacean transport. The conditions during livestock transport are typified by overcrowding and dust. The animals often end up in crowded, dusty feedlots containing animals from a multitude of sources. Further, the livestock are managed as a herd. In contrast, cetaceans are handled as individuals during transport and acclimation. Each individual is managed so as to minimize stress for that individual. This is very different from livestock transport and acclimation.
- c. The following statement is from the Introduction of the study: “Frequent exposure to anthropogenic stressors is hypothesized to increase the susceptibility of cetacean populations to infection.” It should be noted that the authors characterize the statement only as a hypothesis that is a justification for conducting the research. As such, it is a speculative statement, not a conclusion as claimed by the Commenters.
- d. The following statement is also from the Introduction: “The opportunities afforded by trained belugas in zoological settings, despite limited

numbers of animals, provide crucial data that otherwise could not be obtained.” In other words, the majority of the research done to understand the physiology of beluga whales is done with animals in human care.

- e. The following was noted in the discussion section of the study: “However in contrast to the resident belugas, transported belugas displayed an attendant increase in phagocytic and respiratory burst activity by both granulocytes and monocytes.” In layman’s terms, this means the data imply that the transported belugas could be more able to fight infection than the belugas that were not transported.

4. St. Aubin and Geraci (1988) is reviewed below under Statements 2 and 3.

Statement 2: GWU Law School Students and Faculty

Research into the capture and handling stress experienced by cetaceans such as beluga whales indicates that they experience immediate thyroid imbalances as a result of capture, which persist throughout the time spent in captivity and adversely affect the animal's immune system.

Study cited by the Commenter:

1. D.J. St. Aubin and J.R. Geraci, Capture and Handling Stress Suppresses Circulating Levels of Thyroxine (T4) and Triiodothyronine (T3) in Beluga Whales *Delphinapterus Leucas*, 61 *PHYSIOL. ZOOL.* 170–75 (1988), attached as Appendix D.

Response to #2:

Review of the cited article shows the following.

- a. This paper is further reviewed in the response to Statements #1, 2, and 3. The information and analysis regarding the St. Aubin and Geraci study included there is incorporated here by reference.

- b. The significant weight loss experienced by such a large proportion of the study animals makes interpretation of thyroid level changes challenging at best. The paper notes that “Thyroid hormone balance is maintained through an elaborate interaction of feedback mechanisms. A decrease in circulating hormone levels typically elicits a compensatory increase in secretion from the thyroid. This was not observed in the whales after acclimation; decreased thyroid hormone levels persisted throughout the 10-wk period in captivity.” The study authors themselves surmise that “perhaps the feedback mechanisms were overridden by the reduced caloric intake of the belugas while in captivity.” A feedback mechanism is one whereby thyroid secretion levels are increased or decreased based on the detection of the amount of thyroid hormones by the thyroid and the glands controlling the thyroid, the hypothalamus and the pituitary gland.
- c. The authors also note that “An alternative explanation for these observations (declining T3 and T4 after capture) is that circulating concentrations of T4 and T3 might have been elevated by the capture procedure and that subsequent changes reflect a return to normal values.” The authors admit that they do not know if the baseline values collected from the animals immediately after capture are indicative of the actual baseline levels of thyroid hormone since the very act of chasing and capturing the animals to collect the blood may have impacted the thyroid levels in the blood. Consequently, the authors wonder if the measured drops in thyroid levels were returns to more normal levels from an artificially increased initial value.

- d. With respect to the normal (*i.e.*, baseline) levels of thyroid hormones, the authors could not be certain of the accuracy of non-stress baseline values of the thyroid hormones as there was no way to obtain baseline data without first capturing the animal. Research with animals in human care can provide the necessary baseline data.
- e. This study produces some interesting and valuable information but it cannot be considered complete without further corroboration and investigation. The study cannot be considered complete because the authors themselves raise too many questions about things such as the impact of the capture procedure and of nutritional status on the measured levels of thyroid hormones.
- f. While thyroid levels did change during the study period, the cause of the drop was not identified (*e.g.*, no measured relation to cortisol levels, unknown impact of nutritional status and weight loss, unknown impact of sub-optimal housing, challenges measuring accurate and true baseline values after capture procedures, etc.). Therefore, it would be hard to support the authors' assertion that "acute stress does affect normal thyroid hormone balance and supports [one previous study's] suggestion that chronic stress might account for unexpectedly low thyroid hormone levels in some captive cetaceans."
- g. This paper does not provide any evidence regarding effects on the immune system and susceptibility to disease. The Commenter citing this article states that the effects on thyroid function adversely affect the animal's immune system. The cited paper does not address immune

function and, therefore, the Commenter's statement is not supported by the cited paper.

Statement 3: HSUS, WDCS, and GWU Law Students and Faculty

Handling and transport cause significant stress in cetaceans as indicated by a demonstrable elevation in stress hormone levels in cetaceans, including belugas, similar to those humans experience during stressful situations.

Studies cited by the Commenters:

1. St. Aubin and Geraci, 1988 (Capture and handling stress suppresses circulating levels of thyroxine (T4) and triiodothyronine (T3) in beluga whales; *Physiological Zoology* 61; 122-131), attached as Appendix D; and
2. Schmitt et al, 2010 (Baseline, diurnal variations, and stress-induced changes of stress hormones in three captive beluga whales, *Marine Mammal Science* 26: 635-647), attached as Appendix F.

Responses to # 1, 2, and 3:

Review of cited studies.

1. St. Aubin, D.J. and J.R. Geraci, 1988, Capture and handling stress suppresses circulating levels of thyroxine (T4) and triiodothyronine (T3) in beluga whales, *Delphinapterus leucas*, *Physiological Zoology* 61: 170-175.
 - a. In this study, twenty-four juvenile belugas were captured in western Hudson Bay. Seventeen were blood sampled and released immediately. One was held for 15 hours in shallow water and serially sampled. Six were transported to nearby holding areas and maintained for ten weeks in 8m diameter pools of relatively small size, only 10,000 gallons. Placing six whales into two such small pools is inconsistent with current U.S. standards that require 32,100 gallons for the first two whales plus another 16,100 gallons for each additional animal. See 9 C.F.R. §3.104. Four of the whales held for ten weeks lost 15-20% body weight during the study.

It is possible that the inadequate housing and subsequent weight loss contributed to the physiological changes.

- b. T4 (thyroxine) and T3 (triiodothyronine) are secreted by the thyroid gland. These hormones influence the body's metabolism including how rapidly the body uses energy and makes protein for cell function and growth. Hormones are very responsive and can change rapidly. Commenters claim stress from capture and transport caused a thyroid imbalance because Commenters assume that the drop in thyroid hormone levels was below normal levels and was directly related to capture and transport. However, the authors admit that T4 and T3 levels may have been elevated by the capture procedure itself and the subsequent changes might simply reflect a return to normal values. Indeed, similar transient increases in T3 have been seen in other mammal studies. Lower T3 and T4 hormone levels could also have been the result of the decreased appetite and significant weight loss experienced by the animals, not a result of alleged "stress" from capture and transport. Indeed, fasting has been shown in studies to result in a substantial decrease in T3, *e.g.*, studies in rats demonstrate that low T3 syndrome in fasted rats is caused by decreased T4 to T3 conversion in the peripheral tissues as an adaptation and accommodation to the body's energy demands (Matsumura, et al. 1992, Effects of fasting, refeeding, and fasting with T3 administration on Na-K, ATPase in rate skeletal muscle, *Metabolism* 41(9): 995-9.)
- c. The authors of this study admit that the reduced caloric intake by the whales could actually have been the cause of decreased thyroid hormone

levels. Further, as noted above, there is no way to know the pre-capture hormone levels and whether the decrease was simply a return to normal levels. Based on those two important facts, Commenters cannot state that “stress from capture” was the cause of the drop in thyroid hormone levels.

2. Schmitt et al. 2010.

- a. This study’s purpose was to test the hypothesis that stress hormones in three long-term captive belugas follow a diurnal rhythm pattern, become elevated during stages of out-of-water health assessments, and are not elevated during wading contact with humans. In so doing, the authors were able to better characterize the physiology of the stress response in belugas following mild and moderate perturbations that belugas experience during “unconventional” health assessments such as the annual out-of-water examination, where belugas are stretchered, craned out-of-the-water and placed on a foam-padded deck for 20-30 minutes. The diagnostic value of measuring ACTH (an acute stress hormone released from the pituitary gland) was compared to other more commonly measured stress indices (cortisol and aldosterone). While the stress hormones were noted to be elevated during the out-of-water examination, this was perceived by the authors to be a normal supraphysiologic response (values corresponded with comparative synthetic ACTH stimulation in belugas, which is a diagnostic test for adrenal function in human and veterinary medicine. See St. Aubin, D. J., and J. R. Geraci, 1990, Adrenal responsiveness to stimulation by adrenocorticotrophic hormone (ACTH) in captive beluga whales, *Delphinapterus leucas*, pages

149–157 in T. G. Smith, D. J. St. Aubin and J. R. Geraci, eds., *Advances in research on the beluga whale, *Delphinapterus leucas**, Canadian Bulletin of Fisheries and Aquatic Sciences 224) and the hormone analytes returned to baseline values in 12 hours. In addition, the hematologic and biochemical changes were not found to be clinically significant and, therefore, not reported. Due to the small sample size, the authors noted that a larger sample size with variation in age and gender would be necessary to show statistical significance.

CONCLUSION: This paper does not support the statement(s) as claimed. Stress response is a normal adaptive function of the body's response to perceived stimuli. There is no evidence in the paper that these responses were linked to adverse health impacts. In fact, the authors make no claim whatsoever of any such relationship.

Statement 4: GWU Law School Students and Faculty

The Georgia Aquarium should conduct an independent study of stressors of beluga whales in captivity, including any kind of physical and/or psychological damage that results, and make this information publically available. Indeed, much remains to be known about the stress responses of beluga whales and other marine mammals.

Studies cited by the Commenter:

1. Office of Naval Research, *Effects of Stress on Marine Mammals exposed to Sound 6, 17* (2009), attached as Appendix G.

Response to #4:

More data are always a good thing. Indeed, Commenters ignore the fact that much of the physiologic data they seek can only be gathered from animals in human care. For example, if capture in the wild raises stress/hormone levels as Commenters claim, it will never be possible to determine "normal" baseline levels except when the animals are in human care.

Further, the Marine Mammal Protection Act does not authorize the agency to condition the issuance of a permit on the conduct of specified future research.

Statement 5: GWU Law School Students and Faculty

It is widely understood that, amongst mammals generally, bodily responses to the stress of transportation are associated with impaired immune defenses and predisposition to disease.

Studies cited by the Commenter:

1. H. Murata et al., The Effects of Road Transportation on Peripheral Blood Lymphocyte Blastogenesis and Neutrophil Function in Calves, 143 BR. VET. J. 166 (1987), attached as Appendix H;
2. M. Oikawa, et al., Pathology of Equine Respiratory Disease Occurring in Association with Transport, 113 J. COMP. PATHOL. 29 (1995), attached as Appendix I;
3. C.L. Stull & A.V. Rodiek, Physiological Response of Horses to 24 Hours of Transportation Using a Commercial Van During Summer Conditions, 78 J. ANIM. SCI. 1458 (2000), attached as Appendix J; and
4. Katsura Noda et al., Relationship Between Transportation Stress and Polymorphonuclear Cell Functions of Bottlenose Dolphins, 69 J. VET. MED. SCI. 379 (2007), attached as Appendix B.
5. Barbara L. Smith et al., Effects of Road Transport on Indices of Stress in Horses, Equine Vet. J. 1996, attached as Appendix K.

Response to #5:

Review of cited studies.

1. C.L. Stull and A.V. Rodiek, Physiological Response of Horses to 24 Hours of Transportation Using a Commercial Van During Summer Conditions, 78 J. ANIM. SCI. 1458 (2000).
 - a. The transport conditions in this study were wholly different than the conditions that characterize cetacean transports. The horses that were subject to this study were transported in California in August under extreme weather conditions. Specifically, the temperature in the transport vans was not controlled and at times reached 101.5 degrees Fahrenheit, with a relative humidity that reached 81.2%. In contrast, temperature is controlled during cetacean transports to meet the needs of the animals.

Prior to placing a cetacean in a transport unit, water in the unit is adjusted to a temperature appropriate for the species being transported. This includes consideration of the temperature of the habitat water at the origin and destination locations. Water temperature changes very little during a transport but it can be adjusted upward or downward by managing air temperature and the judicious use of ice added to the water. For cetaceans, air temperature is much less significant than water temperature during transport. During the air transport part of the trip, air temperature can be maintained as desired.

- b. The serum glucose levels (*i.e.*, the blood sugar level) in the transported horses were slightly elevated 24 hours after transport but was within the normal range for the species. Similarly, the hematocrit level (*i.e.*, the percentage of whole blood that is red blood cells) was elevated post-transport but returned to normal within 24 hours after transport. When hematocrit rises rapidly in a horse it is likely due to contraction of the horse's very large spleen and/or dehydration. One would not expect to see dramatic changes in cetaceans such as dolphins since a dolphin's spleen is very small and has little effect on red blood cell counts. Cellular enzymes, serum proteins, and cortisol were also elevated during transport but returned to the normal range within 24 hours. There was no evidence in the study that any of these physiologic changes in the horses caused any health problems.
- c. The transported horses experienced an immediate post-transport weight loss of 6% that was due to dehydration and excrement discharge. Within

3 hours of transport after the animals were allowed to drink, the weight loss was already reduced to 2.4%.

- d. The study was not designed to examine any increased susceptibility to disease resulting from transport. The research was intended to measure the effects of stress on horses under extreme heat and humidity conditions. Cetacean transports such as the one that will be done by Georgia Aquarium are designed to minimize the transport stresses to which the horses were subject. The transport plan created by Georgia Aquarium staff incorporates various strategies to maximize the comfort of the animals. Upon initial acquisition by Russian scientists, the animals were transported from Chkalov Island to the Black Sea. This would be considered a situation that habituated the animals to the stimuli. Since then, Utrish Marine Station staff have been asked by Georgia Aquarium staff to execute short “moves” between the holding lagoon and holding pools so as to build a reinforcement history that uses active desensitization (utilizing primary reinforcement, *e.g.*, food, while placing animals in stretchers or riding in carriers) in order to condition the animals to the behavior of being transported as a predictable event and without a need for anxiety. Additionally, the water in the transport carriers is, and will be, monitored for temperature to ensure animals remain in a thermo-neutral state. Water temperature will be adjusted as needed with the addition of ice to the water. Water levels in the carriers are specifically set to immerse the eyes and ears of the animals in order to provide comfort and acoustic management. The custom made stretchers consist of ballistic nylon and kodel lining (synthetic lamb's wool that allows for

body heat to be quickly lost, initially designed for humans that have been burned). This, along with closed cell foam, create a “near weightless” ride for the whales, creating a comfortable situation that protects the eyes of the animals as well as providing protection from abrasions. Cabin pressure and temperature are all set within the guidelines of best practices for safely transporting marine mammals. All other environmental conditions, *i.e.*, sunlight, are monitored and mitigated on a case by case in order to provide expert care to the marine mammals during any transportation. These techniques and program are entirely different from the conditions in the horse study.

CONCLUSION: This paper does not support the statement(s) made by the Commenters. As noted above, findings were either insignificant or irrelevant in establishing any relationship between the transport and health risk to the study animals. Further, the physiologic responses of the horses to the transport remained within normal ranges, or returned to such ranges, shortly after transport. Moreover, as noted above, the methods and conditions of transporting horses in this study have virtually no similarity to the transport methods for cetaceans where the transport is planned and implemented to minimize stress and where the animals are monitored individually by experienced veterinary and animal care experts.

2. M. Oikawa, et al., Pathology of Equine Respiratory Disease Occurring in Association with Transport, 113 J. COMP. PATHOL, 29 (1995).

- a. This study describes two transport experiments involving horses. The transports were 36 hours and 41 hours respectively.
- b. Some of the transported horses may have had pre-existing respiratory disease (*i.e.* pneumonia) and the presence of such diseases post-transport cannot be attributed to the transport. Further, the horses were

exposed to challenging conditions during transport. Specifically, temperatures within the transport vans reached 93 degrees Fahrenheit and the air quality within the vans was seriously degraded. Inside the vans, there were high levels of dust and draughty conditions that challenged the horses' respiratory tracts and that were likely responsible for the development of respiratory pathology/disease. However, in one experiment, these respiratory issues resolved themselves within 24 hours of transport. Further, changes in certain blood parameters that changed during transport returned to normal within 24 hours. In the second experiment, there was no time allowed for recovery as the horses were examined upon arrival and then euthanized.

CONCLUSION: This paper does not support the statement(s) made by the Commenters. While most mammals exhibit a relatively similar physiological response to stress, it is inappropriate to draw conclusions regarding health risks between species, or to infer that transport involving one species elicits a comparable response in another, particularly when the transportation methodologies are very different.

3. Noda et al. (2007) is reviewed in the Response to Statement 1.
4. Murata et al. (1987). This paper reviews the results of taking four bovine calves on a four-hour truck ride up and down a mountain road to assess post-transport stress parameters. The animals were tested 1, 4, and 20 hours after transport and again four days after transport. White blood cells, neutrophils, lymphocytes, eosinophils, B and T lymphocytes, lymphocyte blastogenic suppression, and plasma cortisol were monitored. These are standard elements for monitoring the physiological stress response in mammals. Most of the stress responses were transient, lasting four hours or less. Further, none of the physiologic responses represented a variance from the expected response to the transport event. The report made no

mention of the relevance of the findings to the prevalence of disease in response to the physiologic variables. To the contrary, the transient nature of the variable parameters from the pre-transport controls suggests no such impact.

5. Smith et al. (1996). The reference to this publication by Commenters is irrelevant to the subject of the transportation of cetaceans. The study focuses on a completely unrelated species (horses), transported by an entirely different means of transport (horse trailer, towed by automobile). The transport was a 24-hour continuous transport with brief stops. The stress indices monitored included standard hematology parameters, blood cortisol (stress hormone), food and water intake, gases originating from normal excretions within the enclosed trailer (ammonia and carbon dioxide), pulmonary aerosol clearance rates (measure of lung efficiency) and heart rate. None of these parameters, other than blood cortisol and heart rate, are in any way relevant to cetacean transports. Of these two parameters, blood cortisol was elevated immediately pre- and post-transport as would be expected and there were no relevant alterations in heart rates.

In the discussion section of this report, the authors state: "From our measurements of the transport environment and the responses of horses to transport, it does not appear that the environment itself, with the exception of the high amount of respirable particulates, would directly affect the health of the respiratory tract." Their conclusion was as follows: "The results of this study suggest that 24 h of road transport may not be particularly stressful for horses, if horses are healthy, accustomed to the trailer and their travel companions, permitted to rest at stops at least as frequently as every 3.75 h and are traveling in a well ventilated trailer."

Statement 6: GWU Law School Students and Faculty

Transportation of beluga whales leads to elevations of cortisol, causes physiological changes resulting in neutrophilia, eosinopenia, and lymphopenia (blood disorders associated with acute infection or acute stress).

Study cited by the Commenter:

1. D.J. St. Aubin and J.R. Geraci, Adaptive Changes in Hematologic and Plasma Chemical Constituents in Captive Beluga Whales, *Delphinapterus Leucas*, 46 CAN. J. FISH. AQUAT. SCI. 796, 801 (1989), attached as Appendix L.

Response to #6:

- a. The Commenter's statement in parentheses is inappropriate and inaccurate with regard to the prior statement and is not supported by the results of this study.
- b. In short, the changes are not a "blood disorder." They are physiologic changes that indicate a normal stress response. The Commenter's claim of "blood disorders" is meant to imply an illness or medical condition exists. That is not the case. Neutrophilia, eosinopenia, and lymphopenia are a normal part of the physiologic responses to stress and as such do not necessarily indicate illness or a medical condition. It would be inaccurate to suggest that changes associated with stress are the same as responses to acute infection or that stress responses indicate infection. To imply that acute infection and the stress response are somehow the same is completely misleading.
- c. The authors also found a measurable response to capture and handling that was evident in white blood cells. Most parameters returned to normal in the first week of the study. There was, however, a lowered lymphocytic white blood cell count for the duration of the study (ten weeks). The authors thought the lower lymphocytic white blood cell numbers could be the result of the periodic handling of the animals throughout the study. Most importantly, the authors could not document the cause of the lower

lymphocytic white blood cell counts and there were no documented health consequences.

Statement 7: GWU Law School Students and Faculty

Chronic stress appears to account for unexpectedly generally low thyroid hormone levels in some captive cetaceans

Study cited by the Commenter:

1. S.H. Ridgway and G.S. Patton, Dolphin Thyroid: Some Anatomical and Physiological Findings, 71 Z. VERGLEICHENDE PHYSIOL. 129 (1971), attached as Appendix M.

Response to #7:

Review of cited article. The findings do not support the Commenter's statement. In fact, the Commenter's statement is inaccurate. Ridgway and Patton did not study chronic stress and they did not find "generally low thyroid hormone levels." Instead, they presented the first data on the anatomy and physiology of the thyroid gland in five dolphin species. They did not study beluga whales. Among the five species studied, the authors commented on the large thyroid gland and the relatively high thyroid hormone levels in four of the five species compared to human values. The authors make no connection between their findings and health risks to the subject animals.

Statement 8: GWU Law School Students and Faculty

Acute stress, of the sort associated with handling encounters, has been found to have "profound effects on thyroid hormone balance."

Study cited by the Commenter:

1. D.J. St. Aubin and J.R. Geraci, Adaptive Changes in Hematologic and Plasma Chemical Constituents in Captive Beluga Whales, *Delphinapterus leucas*, 46 CAN. J. FISH. AQUAT. SCI. 796, 801 (1989), attached as Appendix L.

This paper is reviewed in the response to Statement 6.

B. Subject Statement: Noise Statements

Statement 9: HSUS and WDCS

The noise levels, particularly in the IL-76s, to which the belugas will be subjected during this transport will be considerable. Anthropogenic noise is a known stressor for cetaceans, which have very sensitive hearing.

Study cited by the Commenters:

1. Marine Mammals and Noise: A Sound Approach to Research and Management, 2007, a report to Congress from the Marine Mammal Commission, available at: <http://www.mmc.gov/reports/workshop/pdf/fullsoundreport.pdf>, attached as Appendix N.

Response to #9:

At the outset, it should be noted that Commenters cite no reference publications or data to characterize the sound levels in these aircraft. More importantly, the cited report is a 370-page report from the Marine Mammal Commission to Congress that only addresses human sources (anthropogenic) of sound originating in the ocean. Thus, the report addressed in-water sound from sources such as commercial shipping, seismic airgun arrays, Naval sonars, fisheries sonars, research sonars, and acoustic deterrents/ harassment devices. The report did not address airborne noises. It did not, as Commenters allege, address any possible impact of air noises, such as noise in aircraft, on cetaceans.

The report contains seven recommendations to Congress. All relate to in-water noise.

Recommendation 1: Establish a coordinated national research program on the effects of anthropogenic sound on marine mammals and the marine environment.

Recommendation 2: Establish consistent standards for the regulation of sound in the marine environment.

Recommendation 3: Ensure that all sound producers comply with statutory and regulatory requirements.

Recommendation 4: Retain mitigation and monitoring as requirements of the authorization and compliance process and designate the evaluation of existing measures and development of more effective measures as high priorities for the national research program.

Recommendation 5: Require the National Marine Fisheries Service and the Fish and Wildlife Service to develop a management system that accounts for the cumulative effects of sub-lethal exposure to anthropogenic sound and other human impacts on marine mammals.

Recommendation 6: Direct the National Marine Fisheries Service and the Fish and Wildlife Service to streamline their implementation of permitting and authorization processes for research on sound effects and for activities that may take marine mammals incidentally.

Recommendation 7: Promote U.S. leadership in international matters related to anthropogenic sound in the marine environment.

As noted above, this report focuses solely on anthropogenic sound in water, not in air as would be the issue aboard an aircraft.

CONCLUSION: The findings do not support the statement(s) made by Commenters. The study on which Commenters rely considers anthropogenic sound produced within the water environment where cetaceans have very good hearing ability. To support their position, Commenters imply that sound in air is the same as sound in the water. To a cetacean, airborne and waterborne noise are not the same. Beluga whales do not have external ears. They do not hear in air as well as humans. It is incorrect to claim that the effects on cetaceans of noise in the air are the same as noise in water. In that regard, aircraft noise is in a lower frequency, well below the best frequencies of hearing in cetaceans such as bottlenose dolphins and beluga whales. Johnson, et al.,(1989), attached as Appendix O; Atchley et al., A Low Frequency Noise study, Partnership for AIR Transportation Noise and Emissions Reduction, FAA/NASA/TC-Sponsored Center of Excellence, attached as Appendix P. In these lower frequencies, below 4,000 Hz, dolphin and beluga hearing sensitivity is lower than that of humans (Johnson, 1967,

attached as Appendix Q; Johnson et al., 1989). There should be little impact of transport noise on dolphins and belugas. Furthermore, sound in air passes through the air water interface very poorly. Sound projected from an angle toward the water is mostly reflected and its amplitude from air to water is much reduced (Young, 1993, attached as Appendix R). Only if the sound in air is projected directly above the water surface does it enter the water with little reduction of amplitude. As such, sounds of aircraft noise (in air) are very unlikely to cause audible discomfort to a cetacean during transport, even if the aircraft noise is considered loud to the human ear. In practice, cetaceans in transport situations show no sign of discomfort to variable noise levels from the aircraft.

Statement 10: GWU Law School Students and Faculty

Uniquely relevant to the lengthy plane rides at issue here—noise has been found to act as a stressor to marine mammals; one study notes that “[a] range of issues may arise from the extended stress response including, but not limited to, suppression of reproduction (physiologically and behaviorally), accelerated aging, and sickness-like symptoms.”

Study cited by the Commenter:

1. Andrew J. Wright et al., Do Marine Mammals Experience Stress Related to Anthropogenic Noise?, 20 INT’L J. COMP. PSYCH. 274, 290 (2007), attached as Appendix S.

This study is not “uniquely” relevant to plane rides. In fact, it has no such specific relevance. Wright et al. review literature that human-made sounds may stress marine mammals. Wright et al. mention aircraft noise only in relation to aircraft flying overhead of humans. There is no mention of aircraft cabin noise or any relation to beluga transport.

C. Subject Statement: Mortality Statements

Statement 11: HSUS and WDCS

Handling and transport increase mortality risk in cetaceans.

Study cited by the Commenters:

1. Small and DeMaster, 1995 (Acclimation to Captivity: a quantitative estimate based on survival of bottlenose dolphins and California sea lions. *Marine Mammal Science* 11: 510-519), attached as Appendix T.

Statement 12: GWU Law Students and Faculty

Beluga deaths during ground transport have occurred.

Study cited by the Commenter:

1. Abramov et al, 2008; ("The experience of the transportation of the beluga whale in the Utrish Dolphinarium Ltd." Proceedings of the Fifth International Conference on Marine Mammals of the Holarctic, Odessa, 10/14/08-10/18/08, pp. 19-20, available at http://2mn.org/downloads/bookshelf/mmh5_book/1-18.pdf), attached as Appendix U.

Statement 13: HSUS and WDCS

Handling and transport increase mortality risk up to six-fold in cetaceans for more than a month before returning to normal levels; cetaceans never get used to transport and react as strongly to routine moves as they do to a capture from the wild.

Study cited by the Commenters:

1. Small, R.J. and DeMaster, D.P., 1995, Acclimation to captivity: A quantitative estimate based on survival of bottlenose dolphins and California sea lions, *Marine Mammal Science* 11: 510-519, attached as Appendix T.

Statement 14: HSUS and WDCS

Beluga deaths during transport have occurred.

Study cited by the Commenters:

1. Abramov, A.V., E.I. Rozanova and L.M. Mukhametov, 2008, The experience of transportation of the beluga whale (*Delphinapterus leucas*) in the Utrish Dolphinarium Ltd. Proceedings of the Fifth International Conference on Marine Mammals of the Holarctic, Odessa, October 14-18, 2008, pp. 19-20, available at: http://2mn.org/downloads/bookshelf/mmh5_book/1-18.pdf, attached as Appendix U.

Response to # 11, 12, 13 & 14:

1. Review of Small and DeMaster (1995). Small and DeMaster examined three types of "acclimation." The first was acclimation within 30 days of birth. This type of acclimation

does not apply to the animals to be imported since all of the whales proposed to be imported are well beyond 30 days of age. The second form of “acclimation” examined was during the first 90 days after removal from the wild. This type of acclimation is also not relevant as all of the beluga whales proposed for import have already been held for more than 90 days and there have been no mortalities. The third form of “acclimation” examined was post-transport acclimation at a new facility. Although qualitatively (see Figure 5 in Small and DeMaster), it may appear as though there is a post-transfer “acclimation” period for bottlenose dolphins, when evaluated statistically, Small and DeMaster found that was not the case. There was no statistically significant difference in estimates of mortality when the post-transfer “acclimation periods” were removed from the datasets for any of the marine mammal species examined, including beluga whales. Small and DeMaster (1995) did state that those results were not too surprising given their sample sizes; however, for bottlenose dolphin there were sufficient data to allow a direct comparison. They found no significant increase in mortality during the 60-day post-transfer acclimation period.

2. The Abramov paper reviews two methods of beluga transport. One method of transport included a stretcher and water with one animal per container and the other included placing 2-3 animals in one container in water without stretchers. The study revealed two deaths that might be associated with transport but there is no specific information about the cause of death. Thus, there is not much to be learned from this study due to its lack of information regarding the cause of the mortalities.

CONCLUSION: The findings of these studies do not support the Commenters' statements. While mortalities for cetaceans during transports historically have occurred, such have been very rare, and when occurring, follow- up assessments have indicated an over-riding impact of pre-existing health conditions.

Mr. Michael Payne
October 29, 2012
Page 2

Aquarium is prepared to adopt and implement that option if the permit is approved for a sufficient period of time for Georgia Aquarium to enter into the multiple contracts necessary to secure the requisite aircraft. In addition, as soon as the renewed CITES export permits are received, we will transmit them to you.

If you have any questions about the contents of this letter or on any other matter, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "William C. Hurley IV". The signature is fluid and cursive, with a prominent initial "W" and a long, sweeping underline.

William C. Hurley IV

Enclosures

Georgia Aquarium Response to Comments

Index of Appendices and Exhibits

Binder 3 - February 11, 2013

Appendix

- A Curriculum Vitae of Dr. Eric D. Jensen, Dr. James F. McBain, Dr. Caryn P. Poll, Dr. Sam H. Ridgway, Dr. Todd L. Schmitt, Dr. Jay C. Sweeney, and Kevin B. Willis, M.S.
- B Noda K., H. Akiyoshi, M. Aorki, T. Shimada, and F. Ohashi. 2007. Relationship between Transportation Stress and Polymorphonuclear Cell Functions of Bottlenose Dolphins, *Tursiops truncatus*. *Journal of Veterinary Medical Science* 69.4, pp 379-383.
- C St. Aubin, D.J. and L.A. Dierauf. 2001. Stress and Marine Mammals in *CRC Handbook of Marine Mammal Medicine, 2nd Edition*, CRC Press LLC, Bora Raton (L.A. Dierauf and F.M.D. Gulland, eds.). pp 253-265.
- D St. Aubin, D.J. and J.R. Geraci. 1988. Capture and Handling Stress Suppresses Circulating Levels of Thyroxine (T4) and Triiodothyronine (T3) in Beluga Whales *Delphinapterus leucas*, *Physiological Zoology* 61.2, pp. 170-175.
- E Spoon, T.R. and T.A. Romano. 2012. Neuroimmunological Response of Beluga Whales (*Delphinapterus leucas*) to Translocation and a Novel Social Environment, *Brain, Behavior, and Immunity* 26, pp 122-131.
- F Schmitt, T.L., D.J. St. Aubin, A.M. Schaefer, and J.L. Dunn. 2010. Baseline, Diurnal Variations, and Stress-induced Changes of Stress Hormones in Three Captive Beluga Whales, *Delphinapterus leucas*. *Marine Mammal Science* 26.3, pp 635-647.
- G Office of Naval Research. 2009. Final Workshop Proceedings for Effects of Stress on Marine Mammals Exposed to Sound, Arlington, VA 4-5 November 2009.
- H Murata H., H. Takahashi, and H. Matsumoto. 1987. The Effects of Road Transportation on Peripheral Blood Lymphocyte Subpopulations, Lymphocyte Blastogenesis and Neutrophil Function in Calves. *British Veterinary Journal* 143, pp 166-174.
- I Oikawa, M., S. Takagi, R. Anzai, H. Yoshikawa, and T. Yoshikawa. 1995. Pathology of Equine Respiratory Disease Occurring in Association with Transport, Oikawa et al. *Journal of Comparative Pathology* 113, pp 29-43.
- J Stull, C.L. and A. V. Rodiek. 2000. Physiological Responses of Horses to 24 Hours of Transportation Using a Commercial Van During Summer Conditions. *Journal of Animal Science* 78.6, pp 1458-1466.

- K Smith, B.L., J.H. Jones, W.J. Hornof, J.A. Miles, K.E. Longworth, and N.H. Willits. 1996. Effects of Road Transport on Indices of Stress in Horses. *Equine Veterinary Journal* 28.6, pp 446-454.
- L St. Aubin, D.J. and J.R. Geraci. 1989. Adaptive Changes in Hematologic and Plasma Chemical Constituents in Captive Beluga Whales. *Delphinapterus leucas*. *Canadian Journal of Fisheries and Aquatic Sciences* 46, pp 796-803.
- M Ridgway, S.H. and G.S. Patton. 1971. Dolphin Thyroid: Some Anatomical and Physiological Findings. *Z. vergl. Physiologie* 71, pp 129-141.
- N Marine Mammal Commission. 2007. Marine Mammals and Noise: A Sound Approach to Research and Management. A Report to Congress from the Marine Mammal Commission (March 2007)
- O Johnson, C.S., M.W. McManus, and D. Skaar. 1989. Masked Tonal Hearing Thresholds in the Beluga Whale, *Journal of the Acoustical Society of America* 85.6, pp 2651-2654.
- P Hogdon, K.K., A.A. Atchley, and R.J. Bernhard. 2007. Low Frequency Noise Study, Final Report: Partnership for AiR Transportation Noise and Emissions Reduction (PARTNER) Low-frequency Noise Study. Report No. PARTNER-COE-2007-001.
- Q Johnson, C.S. 1966. Sound Detection Thresholds in Marine Mammals. *Proceedings of the Second Symposium on Marine Bio-Acoustics* held at the American Museum of Natural History, New York, April 13-15, pp 247-260.
- R Young, R.W. 1973. Sound Pressure in Water from a Source in Air and vice versa. *Journal of the Acoustical Society of America* 53.6, pp 1708-1716.
- S Wright, A.J., N.A. Soto, A.L. Baldwin, M. Bateson, C.M. Beale, C. Clark, T. Deak, E.F. Edwards, A. Fernandez, A. Godinho, L.T. Hatch, A. Kakuschke, D. Lusseau, D. Martineau, L.M. Romero, L. Weilgart, B.A. Wintle, G. Notarbartolo-di-Sciara, and V. Martin. 2007. Marine Mammals Experience Stress Related to Anthropogenic Noise? *International Journal of Comparative Psychology* 20, 274-316.
- T Small, R.J. and D.P. Demaster. 1995. Acclimation to Captivity: A Quantitative Estimate Based on Survival of Bottlenose Dolphins and California Sea Lions. *Marine Mammal Science* 11.4, pp 510-519.
- U Abramov, A.V., Rozanova E.I., and Mukhametov, L.M. 2008. The Experience of the Transportation of the Beluga Whale (*Delphinapterus leucas*) in the Utrish Dolphinarium Ltd., in *Marine Mammals of the Holarctic: Collection of Scientific Papers after the 5th International Conference*, Odessa, Ukraine, October 14-18, pp 19-20.

Exhibits

- 1 Georgia Aquarium's Response to Comments – Part 2
- 2 Tarry, G. 2013. Unannounced CAZA inspection of Marineland – January 18, 2013. Report to CAZA Accreditation Commission. Canada Newswire.