To whom it may concern:

Please accept this written testimony as my formal SUPPORT for Bill 3055 with amendments regarding cetacean captivity transfer and breeding. I am writing on behalf of myself and the Hawai'i based, international conservation group, Keiko Conservation International.

I propose the following amendments be added to this bill to strengthen it's intentions:

- A ban on breeding in captive facilities to phase out cetacean captivity for entertainment and exhibition purposes.

- A ban on any new captive cetacean facilities in Hawai'i

ADRESSING POINTS MADE IN SLP PETITION:

After thoroughly reading the petition and argument presented by SLP team members - it is clear that some points need to be addressed. The claim that:

"Few of the state's children will have the opportunity to go out on expensive tours to see wild dolphins and if they do they will be upsetting the wild animals... The public is allowed to view and learn up close these precious animals instead of trying to abuse them in their natural environment."

I'm assuming this is in reference to the ongoing problem of constant harassment the Hawaiian spinner dolphins face. This is an issue, but it is a separate issue currently being dealt with by NOAA federal officials through the addition of a regulation that essentially strengthens the MMPA by creating a 50m rule. This proposed and pending regulation will limit invasive boat tours and shore swimmers from harassing the resting spinners and will be enforced and regulated by educational outreach volunteers and OLE federal officers. If anything, facilities like Dolphin Quest and Sea Life Park's "swim-with-programs" could be considered partially to blame for the behavior of many individuals upon seeing the wild spinner dolphins, by misleading people into thinking that dolphins want social interactions with people. By putting visitors and Hawaii residents in an intimate, unnatural and forced setting, it can be responsible for leading people to go into the ocean and seek-out forced and unwanted social interactions with nocturnal species like the Hawaiian spinners. While this IS a huge issue currently in Hawai'i, it should not be the basis for keeping a captive cetacean entertainment facility in business and to continue existence through breeding.

Beyond this, there are a plethora of eco-tours off of O'ahu and outer islands that offer non-invasive and respectful viewing tours that are aligned with the Dolphin SMART program established by NOAA. These tours are also generally being offered at a fraction of the cost of any cetacean encounter offered by SLP and DQ. I sincerely believe that it is unfair to trade one animal's quality of life for another, wild for captive or vise versa. Both equally deserve protection and freedom. We work tirelessly alongside NOAA and other

local groups to develop regulations to better protect wild cetaceans and also, through this bill we are asking for better lives for captured or captive bred cetaceans. Captured and mistreated animals do not equal marine conservation efforts, it equals cruelty and this is not an extreme statement. I hope that our state senators can see past the education/research facade and see that these highly intelligent beings deserve better from us.

Our beautiful island home is remote and surrounded by waters teeming with viewable (and researchable) marine mammals and cetaceans. Through eco-tourism educational opportunities are more than accessible to Hawai'i's youth and tourists. I feel that it is time we consider phasing out cetacean captivity for entertainment purposes and get more people outdoors to enjoy wildlife where it belongs - in the wild.

An argument was also addressed in the SLP petition that claimed that dolphins are safer in the controlled environment of a captive facility, rather than facing the growing dangers of the wild. This is the equivalent of stating that everyone should lock themselves in their homes to save themselves from the growing dangers of the outside world - and subsequently be studied by researchers to learn more about "natural" human behaviors in such an environment.

ACCREDITATION:

In terms of the three accreditations Hawaii's current captive dolphin facilities use as proof of their high standards of animal care, I would like to point-out some major flaws and reasons for concern. (1) American Humane Association requirements have been described as simply being the conventional industry practices and not including standards that the public, are likely to expect from a welfare label. In addition, facilities can be certified without even meeting all of those requirements. There have been multiple complaints filed with the Federal Trade Commission against American Humane Association for their seal of approval and marketing materials being misleading, and their animal care standards being “inconsistent with the public’s perception of what is ‘humane.’”

(2) Both of Dolphin Quest’s founders used to work for the Alliance of Marine Mammal Parks and Aquariums (AMMPA). Rae Stone was even former president. **They created the standards they had to pass.**

Sea Life Park shouldn’t actually even have an AMMPA accreditation anymore as the organization claims to not accredit any facilities that house animals from Japanese drive fisheries. Their recently purchased false killer whale, Kina, is from Iki Island, a well known Japanese drive fishery that operated in the 1970s.

IMATA still allows trainers to participate in the Japanese drive fisheries, like the one in Taiji, featured in the documentary The Cove. In Japanese drive fisheries wild dolphins are herded into an enclosed area by drive fishermen. The “prettiest” dolphins are sold off to trainers and marine parks all over the world. The rest are usually killed as “pest control” because the fishermen believe they are responsible for the decline of fish. The

dolphin meat, dangerously toxic with high methylmercury levels, is then labeled as expensive whale meat and sold in Japanese markets. By allowing employees to participate in this internationally condemned practice it can be gathered that their standards for animal care aren't very high. Certainly not high enough to give an accreditation by them much weight.

One of the most concerning aspects of SLP are the tank conditions. They have been repeatedly cited by AFIS for a variety of violations mostly concerning the lack of sun coverage for their exhibits. Notable AFIS citations were cited in: March 2012, May 2013, June 2014, September 2015, and July 2016.

DEATHS:

Lastly, I would like to mention the 139 deaths that have occurred at Sea Life Park, 91 of which were wild-captured cetaceans from Hawaiian waters - all of which perished. 31 of the 91 Hawaiian captures were of Hawaiian spinner dolphins. Dolphin quest has had a similar history of 18 captive cetacean deaths at their facility. Below are attached files of: deaths (reported and unreported at SLP), a graphic depicting the number of deaths at DQ. I have also attached (last 5 pages) a peer reviewed research article that discusses the correlation between dolphin transportation and impaired immune function.

In conclusion, I sincerely hope that all of these grievances and points will be considered when deciding whether or not these businesses should continue to breed, transfer and exploit captive cetaceans under the guise of education and research.

Mahalo for your time and kokua,

Siena Schaar

BA Biology UHM

Co-founder of Keiko Conservation

Deaths At Sea Life Park:

Reported In MMIR In Yellow
Unreported In Pink

TOTAL: 139

ANIMAL RIGHTS HAWAII KEIKO CONSERVATION INTERNATIONAL CETABASE.ORG

Bottlenose Dolphins : 50

17 total from Hawaii waters

1. NOA0000415- Nihoa (originally a Mississippi/Gulf Of Mexico wild capture from DQ)
2. NOA0000938- Maka (originally a Texas wild capture from DQ)
3. NOA0000197- Kaiwi HAWAII
4. NOA0000279- Punahele (wild capture gulf of mexico)
5. NOA0000289- Itsy Bitsy
6. NOA0000290- Keola
7. NOA0000355- Laukani HAWAII
8. NOA0000418- Ahi
9. NOA0000277- Amiko (wild capture Atlantic Ocean)
10. NOA0000343- Pa'akiki (wild capture Florida/Atlantic Ocean?)
11. NOA0006317- Lupita (Hi'iaka's Calf)
12. NOA0006370- Poliahu's Calf (2007)
13. NOA0006573- Naia's Calif (2006)
14. NOA0006574- Poliahu's Fetus (2009)
15. NOA0006575- Itsi Bitsi's Fetus (2009)
16. NOA0006576- Waiohakaupo*
17. NOA0006784- Hi'iaka's Calf*
18. NOA0000198- Hokulele HAWAII
19. NOA0000199- Apo HAWAII
20. NOA0000200- Haunama HAWAII
21. NOA0000202- Mikimiki HAWAII
22. NOA0000204- Kaulana*
23. NOA0000205- Noenoe HAWAII
24. NOA0000206- Keiki HAWAII
25. NOA0000207- Kaipo HAWAII
26. NOA0000278- Ilima (pregnant at time of capture in Mississippi/Gulf Of Mexico)
27. NOA0000283- Kanewai (wild capture Mississippi/Gulf Of Mexico)
28. NOA0000284- Kainui (wild capture Mississippi/Gulf Of Mexico)
29. NOA0000285- Pupuka (wild capture Mississippi/Gulf Of Mexico)
30. NOA0000286- Ilima's Calf (the mother was pregnant with this calf while captured, see above)
31. NOA0000288- Ponimoni or CNI (wild capture Mississippi/Gulf Of Mexico)
32. NOA0000340- Apo's Calf (1980)
33. NOA0000341- Ipo (Captured somewhere in the pacific unknown origin)
34. NOA0000354- Kaula HAWAII

35. NOA0000356- No name HAWAII
36. NOA0000358- Okoa HAWAII
37. NOA0000359- Uila HAWAII
38. NOA0000371- Lauwa'e or Bak (wild capture Mississippi/Gulf Of Mexico)
39. NOA0000382- Paakiki's Calf (1988)
40. NOA0000384- Lauwae's Calf (1988)
41. NOA0000409- Paakiki's Calf (1991)
42. NOA0000417- Lauwae's Calf (1993)
43. NOA0000280- Mikioi
44. Kane (1963) HAWAII
45. Makua (1963) HAWAII
46. Wela (1964) HAWAII
47. Eha (1965) HAWAII
48. Apo's Calf (1972)
49. Apo's Calf (1974)
50. Pupuka's Calf (1974)

Hybrid (Wholphin): 5

51. NOA0000411- Pohaikealoha 7 years, 11 months old
52. NOA0006429- Kekaimalu's Calf (2007) 1 month old
53. NOA0000210- Mamo 8 months old
54. NOA0000366- Laka's Baby (1985) stillborn
55. NOA0000400- Kekaimalu'S Calf (1990) 8 days old

False Killer Whales: 11

7 total from Hawaiian waters

56. NOA0000187- Makapuu HAWAII
57. NOA0000188- I'anui Hahai HAWAII
58. NOA0000189- Ahinalu HAWAII
59. NOA0000190- Ola HAWAII
60. NOA0000191- Olelo HAWAII
61. NOA0000192- Tita HAWAII
62. NOA0000372- Makapuu's Calf (1986)
63. NOA0000412- Pono (Sirius)- wild capture japan
64. NOA0000413- Maluhia (Arc)- wild capture japan
65. Stillbirth- April 9, 1983
66. Kaena- 1964 HAWAII

Melon-Headed Whales: 3

3 total from Hawaiian waters

67. NOA0000193- Lahaole
68. NOA0000194- Kahlina Kai
69. NOA0000195- Mahukona

Rough-Toothed Dolphins: 9

8 total from Hawaii waters

70. NOA0000209- Malia HAWAII
71. NOA0000213- Unnamed HAWAII
72. NOA0000214- Hou HAWAII
73. NOA0000215- Maa HAWAII
74. NOA0000216- Mahina HAWAII
75. NOA0000217- Makalani HAWAII
76. NOA0000218- Mailohi HAWAII
77. NOA0000219- Makana HAWAII
78. Unnamed 1964

Short-Finned Pilot Whales: 9

9 total from Hawaii waters.

79. NOA0000222- Kilakila HAWAII
80. NOA0000223- Holokai 1- HAWAII
81. NOA0000224- Holokai 2- HAWAII
82. NOA0000225- Nubs- HAWAII
83. NOA0000226- X HAWAII
84. NOA0000227- X HAWAII
85. NOA0000228- X HAWAII
86. NOA0000229- Wahinana HAWAII
87. Unnamed 1965

Pantropical Spotted Dolphins: 13

13 total from Hawaii waters.

88. FOR0000593- X HAWAII
89. NOA0000231- X HAWAII
90. NOA0000232- X HAWAII
91. NOA0000233- Makamae HAWAII
92. NOA0000234- Ilima HAWAII

93. NOA0000235- Mokunani HAWAII
94. Hoku 1963 HAWAII
95. Kiko 1963- HAWAII
96. Kolohe Estimated 1960's- HAWAII
97. Lei 1964- HAWAII
98. Kahili 1964 HAWAII
99. Haina Estimated 1965- HAWAII
100. Nuha Estimated 1965 HAWAII

Pygmy Killer Whales: 3

3 total from Hawaii waters

101. NOA0000236- X HAWAII
102. NOA0000237- X HAWAII
103. NOA0000238- X HAWAII

Spinner Dolphins: 36

31 total from Hawaii waters

104. NOA0000243- No Name HAWAII
105. NOA0000244- Nani HAWAII
106. NOA0000245- Kelekele HAWAII
107. NOA0000246- No name HAWAII
108. NOA0000247- Laka HAWAII
109. NOA0000248- Puka HAWAII
110. NOA0000249- Alii HAWAII
111. NOA0000250- Pikake HAWAII
112. NOA0000251- Moana HAWAII
113. NOA0000252- No name HAWAII
114. NOA0000253- Akamai HAWAII
115. NOA0000254- Pukoo HAWAII
116. NOA0000255- Tita HAWAII
117. NOA0000256- Waimea HAWAII
118. NOA0000257- Kamai HAWAII
119. NOA0000258- Nohea HAWAII
120. NOA0000259- Kahe (UNSURE OF ORIGIN)
121. NOA0000260- Maile HAWAII
122. NOA0000261- Komohana (Westward) HAWAII
123. NOA0000262- Haole HAWAII
124. NOA0000263- Pomaikai
125. NOA0000264- Mahealani HAWAII
126. NOA0000266- No Name HAWAII
127. NOA0000267- Pamakani HAWAII
128. NOA0000268- Tiare HAWAII
129. NOA0000269- Moo HAWAII
130. NOA0000270- Auwaha HAWAII
131. NOA0000271- Kahiku HAWAII
132. NOA0000272- Lilinoe HAWAII
133. NOA0000273- Apiki- HAWAII
134. NOA0000274- Lioele HAWAII
135. NOA0000276- Kahaulani's Calf
136. Mele 1963 HAWAII
137. Moki 1963 HAWAII
138. Stillborn 1971 (Source: Births at Sea Life Park- Ridgeway)
139. Miscarriage 1973

DOLPHIN QUEST CLAIMS THEIR DOLPHINS'
AVERAGE LIFESPAN IS 45 YEARS
THEY'VE ONLY BEEN IN BUSINESS 30 YEARS.

DOLPHIN DEATHS AT DOLPHIN QUEST'S HAWAII FACILITIES

#NOA0005710
Captive Born
never named
trauma
16 DAYS OLD

#NOA0003753
Captive Born
Pele's Calf
not reported
2 DAYS OLD

#NOA0005591
Captive Born
Pele's Calf (Malia)
intestinal torsion
5 YEARS OLD

#NOA0005708
Captive Born
Pele's Calf (Hanale)
not reported
5 YEARS OLD

#NOA0005767
Captive Born
Somers
septicemia
12 YEARS OLD

#NOA0003747
Wild Capture
Leilani
kidney obstruction
14 YEARS OLD

#NOA0003748
Wild Capture
Hobi
Acute septicemia
14 YEARS OLD

#NOA0000937
Listed as Unknown
Apa
Drowned
16 YEARS OLD

#NOA0003750
Wild Capture
Yoichi
NA+CHANNEL BLOCKER TOXIN(S)
4 YEARS OLD

#NOA0003752
Wild Capture
Kai
NA+CHANNEL BLOCKER TOXIN(S)
4 YEARS OLD

#AZA 1084
Captive Born
Stillbirth
0 DAYS OLD

#AZA 1086
Captive Born
Stillbirth
0 DAYS OLD

#NOA0000939
Captive Born
Stillbirth
0 DAYS OLD

#NOA0000940
Captive Born
Stillbirth
1 DAY OLD

#NOA0010384
Captive Born
Euthanasia Life
0 DAYS OLD

#AZA 590
Captive Born
Stillbirth
0 DAYS OLD

#AZA 722
Captive Born
Stillbirth
0 DAYS OLD

ID UNKNOWN
Captive Born
Unknown/Not
Reported
<13 DAYS OLD

FULL PAPER *Clinical Pathology*

Relationship between Transportation Stress and Polymorphonuclear Cell Functions of Bottlenose Dolphins, *Tursiops truncatus*

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ABSTRACT. Dolphins in a captive environment are exposed to various kinds of stresses. Handling and transportation are stressful events for terrestrial mammals, and such stress may affect immune system function and increase susceptibility to infectious diseases. The same phenomenon could occur in dolphins, however, few studies have reported this in dolphins. The objective of this study was to evaluate the relationship between stress and polymorphonuclear (PMN) cell function of dolphins during transportation. Four bottlenose dolphins (*Tursiops truncatus*) were transported for 6 hr by truck. Serum cortisol levels, leukograms, phagocytosis, and superoxide production of PMN cells were evaluated during handling and transportation compared to resting values. The mean serum cortisol level was significantly increased during handling and transportation ($p<0.05$) when compared with the resting values. White blood cell (WBC) counts, eosinophil counts, phagocytosis, and superoxide production of PMN cells during handling and transportation stages decreased significantly in comparison with the resting stage ($p<0.05$). The concentration of serum cortisol was significantly correlated with the results of the WBC counts, eosinophil counts, superoxide production, and phagocytosis ($p<0.01$, $p<0.05$, $p<0.05$, and $p<0.001$, respectively). The present results indicate that handling and transportation are stressful events for dolphins and could affect their PMN cell functions, thereby leading to the impairment of the immune system.

KEY WORDS: dolphin, immune function, transportation stress.

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Dolphins in a captive environment are exposed to various kinds of stresses. Studies on other species have demonstrated that such responses are associated with impaired host defenses and thus many predispose to disease [13, 15, 17, 27]. Stress is defined as the response of the body to any threatening situation, and a resource-based trade-off between the immune system and costly behavior characterizesd by stress-induced immunosuppression [23]. Stress in terrestrial mammals can be monitored by measuring elevations in serum concentrations of adrenal corticosteroids, particularly cortisol [3]. Expression of receptors for the products of the nervous, endocrine, and immune systems and production of hormones in immune cells constitute the basis of immunoendocrine interactions. As a partial effect of increased hormone levels, the total number of circulating neutrophils becomess elevated while lymphocytes and eosinophils decrease [29] and polymorphonuclear (PMN) cell functions change [22].

Bottlenose dolphins, *Tursiops truncatus*, appear to exhibit the same changes, but to a lesser extent than in terrestrial mammals. Some researchers have found that dolphins, which are handled and restrained exhibit eosinopenia and lymphopenia [29]; however, there are currently no published studies on the relationship between stress and PMN cell function.

As a step towards understanding the relationship, we undertook this study to determine the nature of the stress response in bottlenose dolphins. We examined the effects of handling and transportation on cortisol, circulating leukocytes, and on PMN cell functions.

Our aim was to remove bottlenose dolphins from a pool for handling and then transport them for within 6 hr. Their response to handling and transportation was then compared with their blood parameters during resting periods.

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MATERIALS AND METHODS

Animals and collection of blood: Four female bottlenose dolphins (body weight of 200–250 kg) were examined. All of them had been kept for over 5 years in the same dolphinarium, and maintained in a pool in Wakayama, Japan. It was presumed that they were already sexually matured at the point of this study. All of the dolphins were considered normal as a result of prior physical examination and did not show abnormal parameters in blood examinations (complete blood counts and blood biochemical examinations) before the current research commenced. All dolphins had been trained to raise their tail flukes to have blood drawn from the superficial fluke veins (husbandry training) and we collected the samples before handling and transportation to obtain a resting period value. These samples were obtained at 09:00 between October 2001 and February 2002, and the ambient temperature was from 5 to 21°C. The dolphins were transported from Wakayama to Osaka in March 2002, with the maximum and minimum climatic temperatures on the day of transport as 16 and 8°C, respectively. To transport the dolphins, water was first drained from their pools (taking 2 or 3 hr). Then the dolphins were removed from the

pool on stretchers and immediately suspended in transport units. Blood samples were collected at this time (about 07:00) for the handling stage. The units were carried into trucks where air and water temperature were maintained below 20°C, and the back and flukes of dolphins were kept wet using a watering pot during transportation and were covered with a sponge cushion to prevent scratches from the wall of the unit. The dolphins were transported for about 6 hr at an average speed of 50 km/hr. The distance was about 250 km. After the truck arrived at the receiving facility, further blood samples were collected immediately in the units for transport stage samples (about 13:00) and the dolphins were released into the pool. Peripheral blood samples were drawn from a superficial blood vessel on the ventral aspect of the tail fluke. Blood samples for PMN cell functions and hematology were collected in tubes containing heparin. Blood for serum cortisol was collected in tubes without anticoagulant. Samples were placed on ice until they were analyzed, usually within 6 hr. Serum was separated and frozen before being analyzed.

Separation and measurements of functions of PMN cells: For isolation of PMN cells and measurements of PMN cell function in the dolphins, we used methods previously reported by Noda *et al.* [16].

The blood sample was diluted 1:1 with Hank's balanced salt solution without Ca^{2+} (HBSS: Nissui Pharmaceutical, Co., Ltd., Tokyo). The diluted blood was layered on lymphocyte isolate solution (d=1.077 g/m*l*) acquired from Nakarai Tesque, Kyoto, and centrifuged at 400 × g for 20 min at 4°C. After centrifuging, the supernatant containing mononuclear cells was aspirated and the bottom layer containing PMN cells and erythrocytes was collected. Erythrocytes were lysed using NH_4-Tris solution. The cell pellet obtained after centrifugation at 400 × g for 20 min at 4°C was washed twice with HBSS, and then suspended in HBSS. Viable cells were determined by Trypan Blue exclusion and counted with a Bürker-Türk counting chamber. The viability of PMN cells was over 95%. The final cell concentrations were adjusted to 5.0×10^6 viable cells/m*l* of HBSS.

For the evaluation of phagocytosis by PMN cells, polystyrene latex beads (diameter=1.0 mm; Polysciences, Inc., PA) were used, as described previously in Noda *et al.* [16]. Briefly, after pre-incubating PMN cell suspension and autologous serum, 0.1% non-opsoniszed polystyrene latex beads solution was added to the cell suspension. Then, the mixtures were incubated at 37°C and 0°C for 12 hr, respectively. After the incubation, the reaction was terminated. After washing off the superficially attached beads, the PMN cells were smeared on three slide glasses using Cytospin (Shandon Co., PA). The smears were stained with Giemsa solution, and the number of cells ingesting beads per 600 PMN cells was counted under a microscope. Phagocytic activity was expressed by the percentage of PMN cells phagocytosing three or more particles.

To evaluate superoxide production, nitroblue tetrazolium (NBT) reduction by PMN cells was evaluated using methods previously described in Noda *et al.* [16]. The NBT reduction test was conducted in duplicate in 15 × 105 mm silicon-coated glass tubes. 0.5 m*l* of cell suspension (5.0×10^6/m*l*) was mixed with 0.4 m*l* of the NBT solution (1 m*l* mg/m*l*) and 0.1 m*l* of zymosan A suspension (10 mg/m*l*) opsonized by dolphin serum, and incubated at 37°C for 30 min. After incubation, the reaction was terminated by 0.5 M HCl. The mixture was then centrifuged and the supernatant was discarded. The precipitate was dissolved with 3 m*l* of dimethyl sulfoxide (DMSO), heated in boiling water for 5 min and then allowed to cool. After the mixture was clarified by centrifuging at 500 × g for 5 min, the optical density at 565 nm was determined immediately using a spectrophotometer (Shimadzu Co., Kyoto), and using a DMSO blank. The reduction of NBT by resting cells was determined in a similar way but without opsonized zymosan A.

White blood cell count, differential counts of leukocytes, and serum cortisol: Leukocytes were counted using a Celltac-α clinical auto-analyzer (Nihonkoden, Tokyo) [16]. Leukocyte differentiation was estimated by a blood smear stained with Giemsa solution. Serum cortisol was determined by the electrochemilumincescence immunoassay (ECL-IA) method [19] using rabbit antibodies (Rosh Diagnostics Co., Ltd. Tokyo).

*Analytical procedure*s: Data were presented as mean ± standard deviation (SD) and were analyzed for significant differences between resting stage and handling and transport stages by ANOVA using Microsoft Excel® (Microsoft Co., Washington, DC, U.S.A.). A P value < 0.05 was considered statistically significant. Pearson correlation coefficients were calculated using Microsoft Excel® to investigate linear relationships between cortisol and PMN cell functions and differential counts of leukocytes.

RESULTS

The leukogram of the dolphins is shown in Table 1. WBC counts decreased significantly with handling and transportation (5725 ± 806 and 4800 ± 744 /μl, respectively) compared with resting stage (7225 ± 250/μl). There was a significant decrease in eosinophils at the transport stage (91 ± 114/μl) in comparison with the resting stage (1008 ± 128/μl).

Serum cortisol concentrations of dolphins significantly increased during handling and transportation (5.6 ± 2.4 and 6.2 ± 2.4 μg/d*l*, respectively) compared with the resting stage (1.2 ± 0.2 μg/d*l*); however, there was no difference between handling and transportation.

NBT reduction was lower during the handling and transportation stages (0.047 ± 0.025 and 0.050 ± 0.016, respectively) compared with the resting stage (0.078 ± 0.013). In particular, the optical density during the transport stage was significantly lower than that at the resting stage ($p<0.05$).

In addition, the phagocytic activity was also significantly lower during the handling and transport stages (39.9 ± 6.5% and 38.4 ± 2.8%, $p<0.05$, respectively) compared with resting stage (57.4 ± 6.3%). However, there was no significant

Table 1. Leukogram of bottlenose dolphins at each stage

	Resting stage	Handling stage	Transport stage
WBC count (/μl)	7225 ± 250	5725 ± 806*	4800 ± 744*
Stab (/μl)	0	0	52 ± 61
Segments (/μl)	4625 ± 752	3604 ± 918	3655 ± 686
Lymphocytes (/μl)	1620 ± 818	1374 ± 388	885 ± 177
Monocytes (/μl)	126 ± 124	106 ± 77	48 ± 7
Eosinophils (/μl)	1008 ± 128	641 ± 365	91 ± 114*
Basophils (/μl)	0	0	0

Values are the mean ± SD. * Signifcant difference from the resting stage (P<0.05).

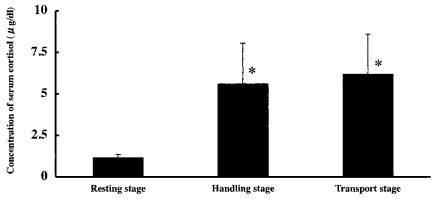

Fig. 1. Mean concentration of serum cortisol in dolphins at each stage. Values indicate the mean ± SD. * Significant difference from resting stage sample (p<0.05).

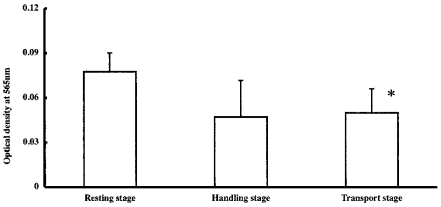

Fig. 2. Mean NBT reduction of PMN cells in dolphins at each stage. Values indicate the mean ± SD. * Significant difference from resting stage sample (p<0.05).

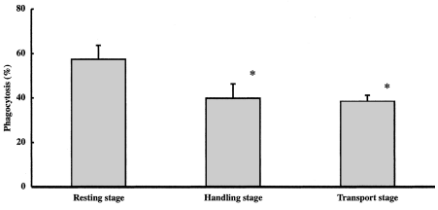

Fig. 3. Mean phagocytosis of PMN cells in dolphins at each stage. Values indicate the mean ± SD. * Significant difference from resting stage sample (p<0.05).

difference between handling and transportation.

The concentration of serum cortisol was significantly correlated with the results of the NBT reduction test (r= –0.77, N=4, P<0.05) and phagocytosis (r= –0.82, N=4, P<0.001). In addition, a correlation between serum cortisol and WBC (r= –0.87, N=4, P<0.01) and eosinophil counts (r= –0.70, N=4, P<0.05) was observed.

DISCUSSION

The effects of capture and transport-induced stress have been reported in various mammals including dolphins [14, 15, 19, 20]. Stressful conditions interfere with the immune response [4, 24]. In many animals, transportation has been associated with hematological, biochemical, metabolic, and endocrine changes that may increase susceptibility to diseases [12, 19, 21]. Immunosuppression caused by stress has been mainly ascribed to adrenal secretions of corticosteroids [9, 19]. In these reports, an elevation of serum cortisol is reported to be a good indicator of a stress response [14, 15, 19, 20]. It has been reported that even 10 min after handling, the serum cortisol concentration had increased and peaked after 1.5 hr in bottlenose dolphins [29]. In the current study, the cortisol level of dolphins during handling and transportation was significantly higher than the level recorded at the resting stage. However, an elevated cortisol level may have occurred prior to handling since it took about 3 hr to remove the water from the pool, and the dolphins were exposed to continued stress before the removal. Suzuki *et al*. reported a diurnal changes in serum cortisol levels in the absence of stress effects in Indo-Pacific bottlenose dolphins and killer whales [28]. This report showed that the serum cortisol concentration peaked at 09:00 and gradually decreased during the evening and night. In our research, regardless of the time of blood sampling for handling and transport stages at 07:00 and 13:00, respectively, the serum cortisol levels of these stages were higher than those at the resting stage (09:00). Therefore, it is considered that the stress of handling and transportation affects these changes. In addition to increased cortisol levels, terrestrial mammals show leukopenia, neutrophilia, and eosinopenia when under stress [2, 22]. Our results showed that the WBC and eosinophil counts decreased during the handling and transport stages. Thus, handling and transportation are stressful events for bottlenose dolphins.

There was a significant difference between the resting stage and handling and/or transport stage in both NBT reduction and phagocytosis. The observed changes in

phagocytosis and NBT reduction were correlated with alterations in circulating concentrations of cortisol induced by the stress of handling and transportation. Elevated serum cortisol concentrastions and changes in immune systems have been reported associated with the transportation of terrestrial mammals [22, 27, 30]. There are few reports on the effects of stress on PMN cell functions, however, Dixit *et al.* [7] reported that stress was correlated with neutrophil functions. In most species, corticosteroids reduce or have no effect on phagocytosis and tend to impair oxidative functions in a dose-dependent manner [1]. However, hydrocortisone has been shown to enhance the chemiluminescence response of human neutrophils [10]. The effect of stress on neutrophil functions differs between experiments. Hormone secretion such as aldosterone and corticosteroids is rapidly when animals receive stress, and then the hormones cause redistribution, lysis, or impaired communication between immunocompetent cells [6, 9, 18] and thus interfere with a limiting step of immune system reactions. Although some researchers have shown that beluga whales and bottlenose dolphins had phagocytosis and oxygen radical generation by peripheral blood leukocytes like terrestrial animals [5, 11], the overall effect of these changes on the immunocompetence of transported dolphins is unclear. In the current study, the concentration of serum cortisol was significantly correlated with the results of WBC counts, eosinophil counts, NBT reduction, and phagocytosis. As a result, the stress of handling and transportation not only affects the leukograms of dolphins but also could reduce the PMN cell functions. We did not evaluate the changes of cortisol, leukograms, and PMN cell functions after transportation. In terrestrial mammals, these parameters are recovered to a level before transportation within a week at most [15, 22, 27]. These reports showed that immunological uncertainty followeding transportation would enhance the potential risk of infectious disease in susceptible individuals. Some reports showed that the increase in cortisol under stress continued for 7 hr and decreased within a few days in dolphins [8, 26, 29]. However, no studies have reported changes in the PMN cell functions after transportation. We must complete further research to examine whether PMN cell functions recover to resting values accompanied by recovery of the cortisol level as in terrestrial mammals. Then we can discuss whether the dolphin has increased susceptibility for infectious diseases after transportation as with some domestic animals.

In conclusion, handling and transportation are stressful events for bottlenose dolphins and this is clearly indicated in serum cortisol levels and leukograms. In addition, the handling and transportation stresses suppress PMN cell functions. We must further study the relationship between stresses and other immune system functions in dolphins, and investigate ways to prevent stress-related immune system suppression.

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SB-3055
Submitted on: 2/1/2018 10:58:49 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
L. Haffner		Oppose	No

Comments:

I oppose SB3055. Dolphins should continue to be shared with future generations for a better understanding of wildlife conservation. Without educational experiences such as Sea Life Park and Dolphin Quest's programs, the children of tomorrow will not learn to respect our oceans and the creatures living there. Sea Life Park and Dolphin Quest provide hands-on meaningful encounters to connect with marine life.

I am not a resident of Hawaii, but the passage of this bill will have a direct influence on the groups ability to close zoos across the United States or at least hamper the education, breeding, and wellbeing of all animals. This is not the early 1900's anymore. Animal science is not loger in the dark ages. We must learn how to live in harmony with all creatures and help them to surrvive. This can only be done by education. Please follow the science and not these radical groups who have little our not facts. Do not vote on an emotional response, follow the education and sciece to protect the Dolphins and all animals of the world.

SB-3055
Submitted on: 2/1/2018 11:25:35 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Lucinda Espinoza	Palace Entertainment	Oppose	No

Comments:

I oppose SB3055! The verbiage in this bill has many hidden agendas. It states to stop the transfer of Cetaceans from the wild to captured facilities for the purpose of breeding and entertainment. Most transfers in the state of Hawaii are for the purpose of education and protection of this wildlife. The institutions on Oahu (i.e, Sea Life Park Hawaii, Dolphin Quest Hawaii) are providing a valuable service by educating the public on how to conserve our resources and how to safely address our wildlife. The park teaches and educates on how to protect endangered Cetaceans and how to keep our coral, beaches, and oceans clean and safe for the longevity of our Cetaceans. The public is allowed to view and learn up close these precious animals instead of trying to abuse them in their natural environment. Please DO NOT PASS this bill. It will only lead to more destruction of our natural wildlife environment.

SB-3055
Submitted on: 2/1/2018 10:51:47 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Rita Stacey		Oppose	No

Comments:

Please do not support SB3055. Please take into consideration the following points:

- The drafted language that “dysfunctional social structure of captive cetaceans is known to cause unnatural aggression and stress, resulting in injury, illness, or death to the animals” is completely unfounded and is not supported by scientific data.

- The importance of access to dolphins in Hawaii’s accredited marine parks for local Hawaiians and school age children. It’s not just for tourists. Locals can go and watch the dolphins, in some cases for free. We need to continue to ensure that marine mammals like dolphins are available to the public to learn about. Seeing animals in accredited facilities leads to caring about these animals, changing conservation behavior to help protect the animals and their natural world that otherwise would be out of site and out of mind.

- Accredited zoological facilities provide a wonderful environment for dolphins, safe from the increasing dangers in the ocean. We should be more concerned about the welfare of hundreds of thousands of dolphins and whales drowning in discarded fishing nets and impacted from overfishing, pollution, marine debris, and boat strikes from poorly managed tour operators.

- Educational impact of experiencing dolphins in an accredited marine parks is safer for the dolphins and people. This is a much better alternative than dozens of boats harassing free ranging spinner dolphins when they’re attempting to rest.

- The marine mammal specialists at accredited marine parks are the experts. They love the dolphins and know the animals’ behavior physiology and mental needs better than anyone. In my 27 years of directly caring for dolphins in an accredited zoo I can attest first hand that cetaceans can and are well cared for and lead productive and fullfilling lives.

- There are NO marine mammal facilities solely for research and education that house dolphins in Hawaii (this is the exception in the Bill). Dolphin Quest and Sea Life Park provide critical support for scientists, research, conservation and

education within the community.

- Accredited marine mammal facilities need to be able to transport animals in order to prevent inbreeding, and to best manage and care for the well-being of the animals.

- Transport of cetaceans is already closely regulated by the USDA and the Hawaii Department of Agriculture. There is no reason to duplicate or ignore the already existing regulatory process!

- If one bans the transport or breeding of dolphins, based on zero scientific data suggesting one should, what is next? Horses? Dogs? Cattle? This is an emotional plea by misinformed animal extremists.

- To discontinue cetacean transportation and breeding would ultimately phase out marine life parks, thus robbing future generations the opportunity to see, experience, and learn about dolphins in this unrivaled setting.

- If you've personally been to both Dolphin Quest or Sea Life Park, and have seen first-hand that these animals are well cared for by their trainers and veterinarians.

Sincerely,

Rita Stacey

SB-3055
Submitted on: 2/1/2018 10:52:39 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Ryan	N/A	Oppose	No

Comments:

I would love to oppose this bill in person, but I do not live in Hawaii. I am from Connecticut and we are hearing about it all the way on the other side of the country. It's baffling to me how offended people are getting in this day and age. Everyone wants to be a social justice warrior and stand up for causes that they aren't even well educated on. They see one documentary and all of a sudden, believe they can speak on an issue. This bill proposes an immient threat to the learnings and education of thousands and thousands of people who want to experience first hand the magic of dolphins. These animals are well taken care of, they are treated with respect and they are playing an important part in the education of not just children, but adults as well. One of my dreams is to be able to study animals, espcially doplphins. I would give anything to be able to have the opportunity to visit these areas of the United States and learn more about the exciting, beautiful creatures that inhabit these lands. Allowing this bill to pass is not only detremental to teaching humans, but it also has the potential to destroy thousands of dreams, like my own, of people who would give anything to be able to experience dolphins up close and personal, and to be able to study them. America is a country that has set standards of education and the bar has been set high. We've seen set backs in our country throughout history and we've also seen great accomplihsments. Don't let this bill set us back. Thank you for your time.

From:	Eric Eimstad
To:	AEN Testimony
Subject:	Vote NO on SB3055
Date:	Thursday, February 1, 2018 10:48:12 AM

I oppose SB3055.

Dolphins should continue to be shared with future generations for a better understanding of wildlife conservation.

Without educational experiences at facilities such as Sea Life Park, the children of tomorrow will not learn to respect our oceans and the creatures living there. Sea Life Park and other marine mammal facilities in Hawaii provide hands-on meaningful encounters to connect with marine life.

Respectfully,

Eric Eimstad

SB-3055
Submitted on: 2/1/2018 11:51:56 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Jared Meurer	N/A	Support	No

Comments:

From: katie pentz
To: AEN Testimony
Subject: Support for SB 3055 Relating to Cetaceans
Date: Thursday, February 1, 2018 10:08:41 AM

To begin to bring appreciation back in to the natural state of the world and the ocean, we must stop making it so accessible to view it without effort or exploration. Captivity tells children and adults alike, that imprisonment of intelligent species is acceptable for our own benefit (i.e. monetary gain, research and education.) This is instilling into younger generations that our lives are more important that others, and the message is the root cause of much suffering in our world. As we hope to move forward and grow, we must not constrain our ideas because of tradition. Over many years captivity of wild animals has proven to be fatal and torturous for those involved. Please push to put an end to the slavery, and look forward to a future where all beings can enjoy the wild world we share.
Thank you for your consideration and time.

SB-3055
Submitted on: 2/1/2018 11:53:12 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Kayla Pineda		Support	No

Comments:

SB-3055
Submitted on: 2/1/2018 11:52:10 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
michael pachico		Support	No

Comments:

SB-3055
Submitted on: 2/1/2018 1:54:56 PM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Robert Schmelzer	Peacefield Farm	Support	No

Comments:

I feel like it's slavery.

SB-3055
Submitted on: 2/1/2018 11:57:30 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
sara ehnstrom		Support	No

Comments:

SB-3055
Submitted on: 2/1/2018 10:24:13 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Tracy Mullen		Support	No

Comments:

We have far surpassed the time in which it is appropriate to continue keeping cetaceans captive. We know how intelligent they are and the strong bonds they can form with each other. Yet people continue to transfer and move them into small holding cells they call tanks where, in Hawaii, they spend their lives looking out at the sea they should be in. We have these animals right off our shorelines for educational purposes. There is no reason we need them to be in small tanks to “educate” future generations. They only thing that is teaching young children is that it is ok to keep a highly intelligent animal locked up for our own entertainment benefit. If these people claim they have these animals for education, why offer to let them pull you around a tank by their dorsal fin? That serves no educational purpose to anyone and is a poor excuse to continuing making money off the confinement of these highly social and intelligent creatures. It is time we stop this cruel act. Many countries and cities are getting on board with it, so let’s lead by example for the rest of the world to see that we can be leaders in change for the future of cetaceans.

SB-3055
Submitted on: 2/1/2018 11:53:18 AM
Testimony for AEN on 2/1/2018 2:30:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Xennah Julian		Support	No

Comments: