



## Inspection Report

Denver Zoological Foundation  
2900 E. 23rd Ave., Operations Gate  
Denver, CO 80205

Customer ID: **3493**

Certificate: **84-C-0002**

Site: 001

DENVER ZOOLOGICAL FOUNDATION

Type: FOCUSED INSPECTION

Date: 27-MAR-2017

### 3.103(b)

#### FACILITIES, OUTDOOR.

\*\*\*Two outdoor off-exhibit holding enclosures, utilized by both seals and sea lions, do not provide shaded areas (either natural or artificial) to protect the animals from direct sunlight.

\*\*\*In the outdoor exhibit pool where the sea lion shows occur, the shade from the sun is not being used appropriately for the animals' activities. A shade structure is present that covers approximately one-third of the pool. This shade, however, was not effectively used to protect the sea lions' eyes during the show. Exhibition and training methods observed by USDA personnel during the morning sea lion show encouraged direct solar exposure to the animals' eyes. During the show, the sun was oriented over the trainer's right shoulder. The animals were repeatedly asked to perform behaviors for which they were rewarded by having food tossed to them to catch. This was not consistently done under the shade structure and the animals were required to lift their heads up and look directly into the sun in order to see and catch the food.

The sea lions and seals have a history of chronic, intermittent eye problems. Direct sunlight can be uncomfortable for the animals. In addition, excessive exposure to UV light (sunlight) has been linked to the development of eye abnormalities in captive marine mammals. Lack of adequate shade may be contributing to the eye conditions in these animals.

Additional steps should be taken to provide shade for marine mammals when they are being asked to interact with the trainers, while holding their heads out of the water, and looking up into the sun. The facility should re-review shade for all marine mammal enclosures and ensure that adequate shelter is provided to afford the animals protection from direct sunlight.

To be corrected by: April 27, 2017

### 3.106(b)(2)

#### WATER QUALITY.

Prepared By: ENGEL D.V.M DOMINIQUE, D V M USDA, APHIS, Animal Care

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\*\*\*Three seals and three sea lions were observed by APHIS personnel to have eye lesions or were identified as having chronic eye issues in their medical records. Medical records dating as far back as 2015 to present indicated that veterinary treatment has been provided for numerous eye conditions, including squinting (which could be indicative of pain), corneal edema, inflammation, conjunctivitis, corneal ulcers, chronic corneal fibrosis, chronic keratitis, aqueous flare, and corneal opacities.

APHIS personnel reviewed water quality records from the seal and sea lion pools from December 2016 to March 2017. The institution's guidelines indicate that bromine ranges for pinnipeds should stay between the range of 0.7-1.0 (unit of measurement not identified in institutional documents). On 1/7/17, 1/16/17, 1/31/17, 2/9/17, 3/3/17, and 3/24/17, spikes in bromine levels were noted in the primary seal lion pool, with levels as high as 1.84. These bromine spikes are outside of the institution's own guidelines and is likely contributing not only to eye discomfort but may possibly cause harm to the animals' eyes. The protocol indicates that when bromine levels are below the acceptable range, the action required is to "adjust bromine feeder." Once the bromine feeder has been adjusted, there is no documentation of follow up testing performed that same day to determine that bromine levels had stabilized.

The protocol indicates that when bromine levels are above the institution's acceptable range, the instructions are to "add 25 oz sodium thiosulfate directly to the pool then retest." No documentation was provided showing that sodium thiosulfate was added to the pool when bromine levels were elevated. Additionally, the documentation provided does not show that follow up water testing was performed that same day to determine that bromine levels had stabilized.

The institution's acceptable range for bromine in the polar bear pools is between 1-1.5 (unit of measurement not identified in institutional documents). The polar bear primary pool exceeded 1.5 on 1/15/17, 1/16/17, 1/17/17, 2/16/17, 2/17/17, 2/18/17, 2/19/17, 3/20/17. The polar bear secondary pool exceeded 1.5 on 12/29/16, thirteen times in January 2017, and twice in March (on 3/13/17 and 3/20/17). Some of the bromine levels were as high as 3.46. Additionally, bromine levels were not checked on January 2, as it was noted in the records that "no Br packets left, Br not tested." On January 3, bromine levels had exceeded acceptable limits.

Bromine spikes and brominated disinfection byproducts may lead to the development and exacerbation of eye problems in marine animals. The sea lions and seals have a history of chronic, intermittent eye conditions that could in part be caused by the high levels of bromine and bromine byproducts found in their water. The institutions guidelines are not detailed enough for employees to adequately respond to fluctuating bromine levels.

The facility should, as a part of its program for water quality, consult with water quality specialists, revise their SOP's to include more detail and retrain staff on water quality procedures. Bromine levels need to be monitored closely and re-testing of the water needs to occur more frequently once high bromine levels are noted.

The facility must ensure that when water is chemically treated, the chemicals shall be added so as not to cause

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harm or discomfort to the marine animals.

To be corrected by: May 27, 2017

### 3.125(a)

#### FACILITIES, GENERAL.

\*\*\*There was a nail head sticking out of a door in the bongo's stall in hoofstock barn 2, approximately two feet up from the ground.

\*\*\*In hoofstock barn 2, the entire bottom of the metal divider in the bongo's stall was rusted out, creating sharp metal edges.

\*\*\*In hoofstock barn 2, there is a wooden chute in the bongo stall. The edge of the outermost wall of the wooden chute is worn, jagged, and in disrepair.

Although some of these issues were identified by the facility as needing repair, it has been approximately six months since they were placed on a work order list, with no specific plan or timeline for addressing the issues. Sharp edges and nail heads have the potential to come into contact with the animals and lead to injury.

The facility must ensure that the indoor and outdoor housing facilities be maintained in good repair and free of sharp points, protruding edges, or gaps/openings in order to protect the animals from injury. A system of timely identification, facility repair, and maintenance must be in place.

To be corrected by: April 27, 2017

### 3.128

#### SPACE REQUIREMENTS.

\*\*\*Two brown bears, a 15 year old female named "Tundra" and a 16 year old male named "Kootenai," are housed together in an enclosure that is made up of a concrete outdoor exhibit that contains a pool of water with two trees lying horizontally across it and concrete indoor holding area. The only soft substrate in the enclosure is a sand pit that allows one bear at a time to be in it. Since this is the only soft area in the exhibit, it is a highly desirable area and can add to potential stress and frustration for the bear who cannot access the sand.

APHIS personnel observed the male brown bear engaging in an abnormal behavior pattern of pacing. APHIS

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personnel observed this abnormal behavior for approximately ten minutes in the morning, during which time the behavior did not stop, and then returned during the afternoon of the following day and observed the abnormal pacing behavior again. The male would pace for several minutes, scratch his back, and then continue to pace; this appeared to be a repetitive, rigid pattern. According to the curator of behavioral husbandry, she is aware of the male bear's abnormal behavior pattern and stated that the female also exhibits an abnormal behavior of head swinging.

This enclosure limits the bears' ability to perform species specific behaviors because it lacks adequate functional and structural elements, including adequate space, adequate opportunities to exhibit climbing behavior, and appropriate quantity of natural substrates. Pacing and head swinging in brown bears are abnormal behavior patterns and can indicate stress, frustration or an underlying medical condition. Inadequate enclosures can also contribute to these abnormal behavior patterns.

Enclosures shall be constructed and maintained so as to provide sufficient space to allow each animal to make normal postural and social adjustments with adequate freedom of movement. Inadequate space may be indicated by evidence of malnutrition, poor condition, debility, stress, or abnormal behavior patterns.

A plan and timeline to address this must be provided by May 27, 2017

### 3.131(d)

#### **SANITATION.**

\*\*\*In the hoofstock building, barn 2, there was an accumulation of bird droppings throughout the central walkway and within individual stalls. Several nests were visible throughout the barn. Bird droppings were present on metal piping, wooden beams, tops of the walls, and on the floor. In the main walkway, there was an accumulation of bird droppings on a pipe above a food preparation table.

The established pest control program does not appear to be effective in controlling the bird populations in this barn. Additional measures to eliminate and attraction and harborage of pests must be implemented to ensure an effective means of controlling the bird population. A safe and more effective program for the control of birds shall be established and maintained by the facility.

To be corrected by: April 27, 2017

This inspection occurred on March 27 and March 28. The inspection was conducted by a facility representative and the exit briefing was conducted with Senior Vice President for Animal Care & Conservation.

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### Additional Inspectors

Rhodes Cindy, Animal Care Inspector

Tims Tanya, Assistant Director

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## Species Inspected

Cust No	Cert No	Site	Site Name	Inspection
3493	84-C-0002	001	DENVER ZOOLOGICAL FOUNDATION	27-MAR-17

  

Count	Scientific Name	Common Name
000002	<i>Alouatta caraya</i>	BLACK HOWLER
000007	<i>Amblonyx cinereus</i>	ORIENTAL SMALL-CLAWED OTTER
000003	<i>Camelus bactrianus</i>	BACTRIAN CAMEL
000200	<i>Desmodus rotundus</i>	COMMON VAMPIRE BAT
000001	<i>Diceros bicornis</i>	BLACK RHINOCEROS
000003	<i>Elephas maximus</i>	ASIAN ELEPHANT
000001	<i>Equus asinus africanus</i>	AFRICAN WILD ASS
000004	<i>Equus caballus przewalskii</i>	PRZEWALSKI'S WILD HORSE
000005	<i>Giraffa camelopardalis</i>	GIRAFFE
000001	<i>Hippopotamus amphibius</i>	HIPPOPOTAMUS
000002	<i>Hyaena hyaena</i>	STRIPED HYENA
000001	<i>Hydrochaeris hydrochaeris</i>	CAPYBARA
000002	<i>Litocranius walleri</i>	GERENUK
000002	<i>Lontra canadensis</i>	NORTH AMERICAN RIVER OTTER
000100	<i>Macroglossus minimus</i>	LONG-TONGUED FRUIT BAT
000003	<i>Neofelis nebulosa</i>	CLOUDED LEOPARD
000003	<i>Phoca vitulina</i>	HARBOR SEAL
000003	<i>Prionailurus viverrinus</i>	FISHING CAT
000002	<i>Rhinoceros unicornis</i>	INDIAN RHINOCEROS
000002	<i>Tapirus indicus</i>	MALAYAN TAPIR
000004	<i>Tragelaphus eurycerus</i>	BONGO
000002	<i>Ursus arctos horribilis</i>	GRIZZLY BEAR
000002	<i>Ursus maritimus</i>	POLAR BEAR
000006	<i>Zalophus californianus</i>	CALIFORNIA SEA LION
<b>000361</b>	<b>Total</b>	