
NOAA FISHERIES
OREGON

Location/Take Information

Location

Research Area: Captivity
Location Description: Authorized annual research takes at Mystic Aquarium (or Georgia Aquarium) for the five beluga whales identified in Appendix 1, Table. See the details column for more information.

Take Information

*	**Line Number:**	1
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Male and Female
	Expected Take:	5
	Actual Take:	5
	Indirect Mortality:	
	Actual Indirect Mortality:	
	Take Action:	Captive animals (research, enhancement, public display)
	Observe/Collect Method:	Captive
	Procedure:	Sample, blood
	Transport:	N/A
	Begin Date:	08/27/2020
	End Date:	08/31/2021
	Details:	Studies 1,2,5. See Appendix 1, Table 2 of permit for details.

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*	**Line Number:**	2
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Male and Female
	Expected Take:	5
	Actual Take:	5
	Indirect Mortality:	
	Actual Indirect Mortality:	

Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Sample, exhaled air
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Studies 2,3,5. See Appendix 1, Table 2 of permit for details.

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* **Line Number:**	3
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Male and Female
Expected Take:	5
Actual Take:	5
Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Other
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 2. Other = Sample, saliva. See Appendix 1, Table 2 of permit for details.

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* **Line Number:**	4
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Male and Female
Expected Take:	5
Actual Take:	0
Indirect Mortality:	
Actual Indirect Mortality:	

	Take Action:	Captive animals (research, enhancement, public display)
	Observe/Collect Method:	Captive
	Procedure:	Sample, fecal
	Transport:	N/A
	Begin Date:	08/27/2020
	End Date:	08/31/2021
	Details:	Study 2. See Appendix 1, Table 2 of permit for details.

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*	**Line Number:**	5
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Male and Female
	Expected Take:	5
	Actual Take:	0
	Indirect Mortality:	
	Actual Indirect Mortality:	
	Take Action:	Captive animals (research, enhancement, public display)
	Observe/Collect Method:	Captive
	Procedure:	Other
	Transport:	N/A
	Begin Date:	08/27/2020
	End Date:	08/31/2021
	Details:	Study 2. Other = Sample, skin. Skin scrapes for development, validation, and measurement of gene expression (Study 2): 4x per week x 50 weeks = 200 samples/year (200 takes/whale/year).

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*	**Line Number:**	6
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Male and Female
	Expected Take:	5
	Actual Take:	5
	Indirect Mortality:	

Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Other
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 6. Other = Sample, swab. Skin swabs for microbiome: 2x per week x 50 weeks = 100 samples/whale/year (100 takes/whale/year).

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* **Line Number:**	7
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Male and Female
Expected Take:	5
Actual Take:	5
Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Sample, blowhole swab
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 6. Blowhole swabs for microbiome: 2x per week x 50 weeks = 100 samples/whale/year (100 takes/whale/year).

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* **Line Number:**	8
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Male and Female
Expected Take:	5
Actual Take:	4

Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Sample, anal swab
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 6. Anal swabs for microbiome: 2x per week x 50 weeks = 100 samples/whale/year (100 takes/whale/year).

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* **Line Number:**	9
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Male and Female
Expected Take:	5
Actual Take:	5
Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Other
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 6. Other = Oral swab. Oral swabs for microbiome: 2x per week x 50 weeks = 100 samples/whale/year (100 takes/whale/year).

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* **Line Number:**	10
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Female
Expected Take:	4

Actual Take:	0
Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Other
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 6. Other = vaginal swab. Vaginal swabs for microbiome: 2x per week x 50 weeks = 100 samples/female whale/year (100 takes/whale/year).

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* **Line Number:**	11
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Male and Female
Expected Take:	5
Actual Take:	0
Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Photogrammetry
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 4. Photogrammetry: 30 photographs/month x 12 months/year = 360 takes/whale/year.

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* **Line Number:**	12
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile

Sex:	Male and Female
Expected Take:	5
Actual Take:	0
Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Measure
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 4. Morphometric measurements: 1 set of measurements/month x 12 months = 12 takes/whale/year.

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* **Line Number:**	13
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Male and Female
Expected Take:	5
Actual Take:	0
Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Weigh
Transport:	N/A
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Study 4. Weights: 4 weights per year = 4 takes/whale/year.

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* **Line Number:**	14
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile

	Sex:	Male and Female
	Expected Take:	5
	Actual Take:	0
	Indirect Mortality:	
	Actual Indirect Mortality:	
	Take Action:	Captive animals (research, enhancement, public display)
	Observe/Collect Method:	Captive
	Procedure:	Instrument, suction-cup
	Transport:	N/A
	Begin Date:	08/27/2020
	End Date:	08/31/2021
	Details:	Study 8. Testing suction-cups for animal borne imaging (ABI) systems and tags: 3 sessions per week x 50 weeks = 150 takes/ whale/year.

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*	**Line Number:**	15
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Male and Female
	Expected Take:	5
	Actual Take:	0
	Indirect Mortality:	
	Actual Indirect Mortality:	
	Take Action:	Captive animals (research, enhancement, public display)
	Observe/Collect Method:	Captive
	Procedure:	Auditory brainstem response test
	Transport:	N/A
	Begin Date:	08/27/2020
	End Date:	08/31/2021
	Details:	Study 3. Hearing and physiological response to anthropogenic sound. See Appendix 1, Table 2 of the permit for details.

Location

Research Area: Captivity
Location Description: Importation (from Marineland of Canada to Mystic Aquarium) and captive

maintenance of five beluga whales for over the duration of the permit. See Appendix 1, Table 1 of the permit for details.

Take Information

*	**Line Number:**	1 **Version:** A
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Female
	Expected Take:	1
	Actual Take:	1
	Indirect Mortality:	
	Actual Indirect Mortality:	
	Take Action:	Captive animals (research, enhancement, public display)
	Observe/Collect Method:	Captive
	Procedure:	Captive, maintain; Import; Transport
	Transport:	1;2
	Begin Date:	08/27/2020
	End Date:	08/31/2021
	Details:	Jetta/NOA0010684. Captive-born at Marineland 7/17/14; Offspring of dam Skyla (wild capture, Sea of Okhotsk, Russia); potential sires: Andre (wild capture, Barents or White Sea, Russia), Kodiak, Orion, or Tuktoyaktuk (wild capture, Sea of Okhotsk, Russia).

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*	**Line Number:**	2 **Version:** A
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Male
	Expected Take:	1
	Actual Take:	1
	Indirect Mortality:	
	Actual Indirect Mortality:	
	Take Action:	Captive animals (research, enhancement, public display)
	Observe/Collect Method:	Captive
	Procedure:	Captive, maintain; Import; Transport

	Transport:	1;2
	Begin Date:	08/27/2020
	End Date:	08/31/2021
	Details:	Havok/NOA0010685. Captive-born at Marineland 8/10/15; Offspring of dam Secord (wild capture, Sea of Okhotsk, Russia); potential sires: Tuktoyaktuk or Orion (wild capture, Sea of Okhotsk, Russia).

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*	**Line Number:**	3
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Female
	Expected Take:	1
	Actual Take:	1
	Indirect Mortality:	
	Actual Indirect Mortality:	
	Take Action:	Captive animals (research, enhancement, public display)
	Observe/Collect Method:	Captive
	Procedure:	Captive, maintain; Import; Transport
	Transport:	1;2
	Begin Date:	08/27/2020
	End Date:	08/31/2021
	Details:	Havana/NOA0010675. Captive-born at Marineland 7/23/15; Offspring of dam Kelowna (wild capture, Sea of Okhotsk, Russia); sire Andre (wild capture, Barents or White Sea, Russia).

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*	**Line Number:**	4
	Species:	Whale, beluga
	Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
	Production/Origin:	Captive
	Lifestage:	Adult/ Juvenile
	Sex:	Female
	Expected Take:	1
	Actual Take:	1
	Indirect Mortality:	
	Actual Indirect Mortality:	
	Take Action:	Captive animals (research, enhancement, public display)

Observe/Collect Method:	Captive
Procedure:	Captive, maintain; Import; Transport
Transport:	1;2
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Kharabali/NOA0010671. Captive-born at Marineland 07/20/14; Offspring of dam Aurora (wild capture, Sea of Okhotsk, Russia); sire Kodiak (wild capture, Sea of Okhotsk, Russia).

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* **Line Number:**	5 **Version:** A
Species:	Whale, beluga
Listing Unit/Stock:	Sakhalin Bay-Nikolaya Bay-Amur River Stock
Production/Origin:	Captive
Lifestage:	Adult/ Juvenile
Sex:	Female
Expected Take:	1
Actual Take:	1
Indirect Mortality:	
Actual Indirect Mortality:	
Take Action:	Captive animals (research, enhancement, public display)
Observe/Collect Method:	Captive
Procedure:	Captive, maintain; Import; Transport
Transport:	1;2
Begin Date:	08/27/2020
End Date:	08/31/2021
Details:	Sahara/NOA0010683. Captive-born at Marineland 07/23/14; Offspring of dam Acadia (wild capture, Sea of Okhotsk, Russia); potential sires: Andre (wild capture, Barents or White Sea, Russia), Kodiak or Orion (wild capture, Sea of Okhotsk, Russia).

Transport Information

1.

Mode(s) of Transportation:	Transport #1 (Importation from Marineland of Canada to Mystic Aquarium). See attached Final Application.
Transportation Company:	See attached Final Application.
Maximum amount of time between capture and arrival:	See attached Final Application.

Container Description:	See attached Final Application.
Special Care:	See attached Final Application.
Accompanying Personnel Qualifications:	See attached Final Application.
Facility Title:	Mystic Aquarium
Facility Affiliation/Organization:	
Address:	55 Coogan Blvd Mystic, CT 06355 UNITED STATES
Phone Number:	(860)572-5955 ext.
Containment Method:	See attached Final Application.
Final Disposition:	See attached Final Application.

2.

Mode(s) of Transportation:	Transport #2 (Potential transport from Mystic Aquarium to Georgia Aquarium). See attached Final Application.
Transportation Company:	See attached Final Application.
Maximum amount of time between capture and arrival:	See attached Final Application.
Container Description:	See attached Final Application.
Special Care:	See attached Final Application.
Accompanying Personnel Qualifications:	See attached Final Application.
Facility Title:	Georgia Aquarium
Facility Affiliation/Organization:	
Address:	225 Bakers Street NW Atlanta, GA UNITED STATES
Phone Number:	
Containment Method:	See attached Final Application.
Final Disposition:	See attached Final Application.

Report Comments and Analysis

What progress did you make toward meeting your objectives this year? Summarize what you did and if and how you met your objectives. List citations for any reports, publications, and presentations from this reporting period. We may request electronic copies.

LOCATION 1
Five captive born beluga whales were transported from Marineland of Canada, Inc. (Niagara Falls, Ontario, Canada) to Mystic Aquarium (Mystic, Connecticut) May 14-15, 2021, pursuant to MMPA Section 104 for scientific research.

Progress has been made for the following three research studies: Study 1- (Neuroimmunological Response to Environmental and Anthropogenic Stressors); Study 2- (Development of novel non-invasive techniques to assess health in free-ranging, stranded and endangered belugas); and Study 6- (Microbiome).
Study 1- Neuroimmunological Response to Environmental and Anthropogenic Stressors
The transport of the five whales from Marineland of Canada, Inc. to Mystic Aquarium, predicted to elicit a physiological response, allowed for the opportunity to collect blood samples pre-transport and upon arrival at Mystic Aquarium.
Whales were not trained for long duration blood layouts, which made getting the amount of blood needed challenging. It was also challenging accessing the whales in order to take blood samples pre-transport at Marineland. Various amounts of blood were obtained pre-transport for all five whales. Whales also had blood drawn upon arrival at Mystic Aquarium in the transport stretcher before introduction to the habitat. Although blood was to be sampled post transport from the whales, their behavior didn't allow for even a short duration blood draw for research purposes. All blood samples were processed and archived until subsequent analyses. To date archived blood samples have been analyzed for immune function including a) lymphocyte proliferation and b) quantification of lymphocyte subsets for pre-transport and upon arrival at Mystic Aquarium. However, there wasn't enough blood for pre-transport assessment of lymphocyte subsets as well as pre-transport lymphocyte proliferation for two of the whales.

a) Lymphocyte Proliferation
Sahara, Jetta and Kharabali each had enough blood to examine T lymphocyte proliferation pre vs. post transport. Stimulation Indices for pre-transport at the optimal concentration of mitogen (to stimulate T cells) ranged from [redacted], while arrival samples ranged from [redacted]. Arrival samples only were available for Havana and Havok showing a stimulation index of [redacted]. Post transport blood samples could not be obtained within the 48 hours following transport due to lack of voluntary participation from the whales and lack of training.
b) Quantification of Lymphocyte Subsets
Only arrival samples were available to investigate lymphocyte subsets including MHC II+, T cells, T helper cells, B cells and T/B cell ratios for each whale. Ranges of MHC II+ cells were [redacted] cells; for T cells [redacted]; for T helper cells [redacted]; for B cells [redacted]; and [redacted] for T/B cell ratios. Post transport blood samples within the 48 hours following transport could not be obtained due to lack of voluntary participation from the whales and lack of training.
Study 2- Development of novel non-invasive techniques to assess health in free-ranging, stranded and endangered belugas
The transport of the five whales from Marineland of Canada, Inc. to Mystic Aquarium, predicted to elicit a physiological response, allowed for the opportunity to collect saliva, blow and blood

samples pre-transport and upon arrival at Mystic Aquarium. Blood samples obtained are described above and were processed and archived for study 2 in addition to study 1.

Blow

Whales had not been trained for blow collection at Marineland as we had originally anticipated or at least not to the training expectations for adequate blow sample collection. Pre-transport samples were collected but consisted of one breath each. Blow was collected opportunistically from the five whales in the transport stretcher before transport, upon arrival at Groton Airport and in the stretcher upon arrival at Mystic Aquarium by attaching the collecting device (petri dish with nylon membrane) to a bike reflector pole and holding it above the blowhole until 2-3 exhales were collected. Samples were also collected for molecular analysis by holding two conical tubes above the blowhole.

Once at Mystic Aquarium, training for blow collection was prioritized and whales were making good progress. Some samples were collected during the training process. All blow samples were processed for archiving until assay validation has been completed.

Saliva

Saliva was collected behaviorally at Marineland, although whales would break from the behavior frequently. Saliva was also collected at different time points post transport. Once at Mystic Aquarium, trainers were able to continue to work with whales on behavioral saliva collection and collected saliva during sessions as feasible. All saliva samples were processed and archived for analyses after validation of assay.

Feces

Feces collections are listed as involving zero “takes” in the research take table. Whales are not trained for fecal collection. Opportunistic fecal samples were taken from the habitat to have at least some material to work with. Collection of samples was desired to be as close to arrival as possible for measurement and monitoring of hormones over time. Although not ideal for research purposes, this opportunistic collection was at least made close to arrival and will get us started until whales are trained and fecal samples can be collected the optimal way.

Skin Scrapes

Skin scrapes are listed as involving zero “takes” in the research take table. The trainers are focusing on husbandry and basic behaviors with the research behaviors we have prioritized to start to include blood, blow, saliva, swabs for skin, blowhole, oral, and layout behavior since it is the foundation for studies 3, 4, and 8. It is desired for whales to layout for skin scrapings as well after success of these prioritized behaviors. Going forward in collaboration with the veterinary and husbandry teams, skin scrapes could be taken opportunistically during health assessments.

Study 6- Microbiome

Swabs for microbiome were collected from whales at various body sites (not all sites for every whale) at Marineland. At Mystic Aquarium microbiome swabbing primarily focused on the mouth (since whales had open mouth behavior for saliva) and skin on the melon (since the head was out of the water). Training needs to occur for the whales to behaviorally receive or layout for blowhole, rectal and skin on either side of the dorsal ridge towards this study. Vaginal swabs were primarily for reproductive studies which were not approved. However, they were left in as the vaginal microbiome will be valuable to study and compare with other areas of the body sampled for microbiome once the behavior for microbiome sampling is trained. For each collection of biological samples, water samples were also collected in the habitat at Marineland and at Mystic Aquarium.

Studies 3 (acoustic studies), 4 (photogrammetry (measure and weigh), 8 (tags i.e. testing of suction cups) all had zero takes due to the need to train the whales in basic behaviors. The layout behavior is the foundation for these studies and trainers are prioritizing this behavior after blood, blow, saliva, and swabs for oral, blowhole and skin. Weights are not listed as a research take since they need to be done in conjunction with the photogrammetry study.

Necropsy and Health Assessment
In addition to progress on the above, samples for research were taken from Havok's necropsy including blood, microbiome swabs and a series of tissues including major internal organs. Tissues were both flash frozen and preserved in RNAlater.
Research sampling has been on hold since August 6, 2021.

LOCATION 2
Five captive born beluga whales were transported from Marineland of Canada, Inc. (Niagara Falls, Ontario, Canada) to Mystic Aquarium (Mystic, Connecticut) May 14-15, 2021, pursuant to MMPA Section 104 for scientific research. A breeding prevention plan was implemented through the separation of target and non-target animals from May 15 to June 18, 2021. From June 18 to June 24, 2021, target and non-target animals were mixed with access to all areas of the Arctic Coast habitat. On June 24, 2021, the non-target adult male had an erection while following target animals around the habitat prompting the separation of target and non-target animals through the definitive end of breeding season. The second half of June is on the periphery of the breeding season.

Research sampling surrounding the transport is described above.

Summarize how animals reacted to specific procedures.

Include normal and abnormal responses of target and non-target animals. Where possible, provide quantitative data and estimate the proportion of animals (%) that had those reactions.
LOCATION 1
All target and non-target animals had normal responses to voluntary attempts at research sampling 100% of the time. Some target animals had normal behavioral breakdown after transport resulting in delayed participation in sampling, however, no abnormal responses were noted.

Havana NOA0010675-100% normal response to behaviors to support Studies 1, 2 and 6.
Havana was participating in the following behaviors: saliva collection, oral swab, skin swab, dorsal layouts towards this sampling and blood collection.

Havok NOA0010685-100% normal response to behaviors to support Studies 2, and 6
Havok was participating in the following behaviors: saliva collection, oral swab, skin swab and dorsal layouts.

Jetta NOA0010684-100% normal response to behaviors to support Studies 1, 2 and 6.
Jetta was participating in the following behaviors: saliva collection, oral swab, skin swab, dorsal layouts and blood collection.

Kharabali NOA0010671-100% normal response to behaviors to support Studies 1, 2 and 6.
Kharabali was participating in the following behaviors: saliva collection, oral swab, skin swab, dorsal layouts and blood collection.

Sahara NOA0010683-100% normal response to behaviors to support Studies 1, 2 and 6.
Sahara was participating in the following behaviors: saliva collection, oral swab, skin swab, dorsal layouts and blood collection.

All target and non-target animals had normal responses to husbandry and health assessments 100% of the time.

Havok NOA0010685-100% normal response
Havana NOA0010675-100% normal response
Jetta NOA0010684-100% normal response
Kharabali NOA0010671-100% normal response
Sahara NOA0010683-100% normal response

All target and non-target animals had normal responses to medical treatments 100% of the time.

Havok NOA0010685-100% normal response
Havana NOA0010675-100% normal response
Jetta NOA0010684-100% normal response
Kharabali NOA0010671-100% normal response
Sahara NOA0010683-100% normal response

All target and non-target animals had normal responses to incidental public display 100% of the time.

Havok NOA0010685-100% normal response
Havana NOA0010675-100% normal response
Jetta NOA0010684-100% normal response
Kharabali NOA0010671-100% normal response
Sahara NOA0010683-100% normal response

LOCATION 2
Transport: Handling and Loading into Cradles, ride in cradles, loading into airplane
In Canada: Animals were individually handled in low water pools and placed into stretchers. No adverse, nor unexpected reactions were noted with any of the 5 animals during this process. Each animal was lifted from the pool via crane and placed into specially designed transport units, each lined with close cell foam, pool liner, and 24" of water for land and air transport. Each stretcher hung from cross beams which allowed animals to be partially submerged in water, but blow holes remained above water. This kept the animals wet, took weight off their body, and kept them safe during transit. During the land and air transport the animals were attended by staff.
Summary of each animal:
• Havana, NOA0010675 – observed moving slightly while in cradle/stretcher, respiration rate was slightly elevated during transit but returned to normal as soon as she was released into the Arctic Coast habitat.
• Havok, NOA0010685 – observed moving moderately while in cradle/stretcher, respiration rate varied between normal and slightly higher during transit and returned to normal as soon as he was released into the Arctic Coast habitat.
• Jetta, NOA0010684 – observed moving moderately while in cradle/stretcher, respiration rate was slightly elevated during transit but returned to normal as soon as she was released into the Arctic Coast habitat.
• Kharabali, NOA0010671– observed with very little movement while in cradle/stretcher, respiration rate was slightly elevated at beginning of transport and normalized during transport and when released into the Arctic Coast habitat.

• Sahara, NOA0010683 – observed moving moderately while in cradle/stretcher, respiration rate was slightly elevated at beginning of transport and normalized during transport and when released into the Arctic Coast habitat.

Explain your efforts to conduct follow-up monitoring. Report your findings. Photographs are useful to document things like wound healing.

We are especially interested in:
• Animal responses to new or novel procedures or activities.
• Time it takes to resume normal behavior after harassment.
• Time it takes to re-populate rookeries or haul outs after harassment.
• Condition of animals when resighted or recaptured.
• Recovery from sedation and/or handling and post-release behavior.
• Healing at site of invasive sampling (e.g., biopsy).
• Healing at site of invasive tag deployment (e.g., surgical tag implants requiring sutures, remotely deployed dart/barb, deep-implant, medial ridge, and pygal tags).
• Tag retention and tag breakage (i.e., is the tag still attached and what condition is the tag in?).
LOCATION 1
Target animals had normal responses to new/novel procedures including recovery of behavioral training and implementation of new training processes 100% of the time.
Havok NOA0010685-100% normal response
Havana NOA0010675-100% normal response
Jetta NOA0010684-100% normal response
Kharabali NOA0010671-100% normal response
Sahara NOA0010683-100% normal response
Target animals had normal recovery of in-water behavior after behavioral sampling for research, husbandry training/assessments, and/or medical treatment 100% of the time.
Havok NOA0010685-100% normal response
Havana NOA0010675-100% normal response
Jetta NOA0010684-100% normal response
Kharabali NOA0010671-100% normal response
Sahara NOA0010683-100% normal response

LOCATION 2
Target animals had normal recovery from sedation and handling and post-release behavior after the transport.
Havok NOA0010685-100% normal response
Havana NOA0010675-100% normal response
Jetta NOA0010684-100% normal response
Kharabali NOA0010671-100% normal response
Sahara NOA0010683-100% normal response

Did serious injuries or mortalities occur or did you take a protected species you were not permitted to take? If so, and you already submitted an incident report, please briefly describe the event here and refer to the incident report.

If such an incident occurred and you have not yet reported it, provide a full description of the incident (date and location of event; species and circumstances of how the take occurred; photographs; necropsy and histopathology reports, or other information to confirm cause of death or extent of injuries; etc.). Also, include steps that were or will be taken to reduce the possibility of it happening again.

LOCATION 1

No serious injuries or mortalities occurred as a result of the research.

LOCATION 2

No serious injuries occurred during the handling of the animals for transport to Mystic Aquarium. Please refer to the Incident Report submitted on 8/17/2021 for information on the mortality of the male beluga from lymphoplasmacytic enteritis. Note that a second mortality (Havana) occurred on 2/11/22, outside the period covered by this annual report.

Lymphocyte proliferation and quantification of lymphocyte subsets (in addition to routine clinical tests), were also analyzed for health assessment on Havok during his illness leading up to his death and well as Sahara who became ill but recovered. Most notable were the decrease in lymphocyte subsets in Sahara from June 7- June 29, with B cells being the lowest subset. Upward trends with stable lymphocyte subsets were observed thereafter. Lymphocyte proliferation decreased from June 1-27, then increased reaching the highest on June 29th, dipped down to lower proliferation indices on June 30th, and stabilized from July 1 to the 6th. Havok's lymphocyte subsets continued to rise after arrival with highest values between July 19-27. T/B cell ratios peaked on the 19th and then decreased through the 27th of July. While the above is difficult to interpret given all the confounding variables (medications, handling, procedures, etc.) the data shows the immune system, at least reflective of these specific immune tests was functioning in these two cases.

Describe any other problems encountered during this reporting period and steps taken or proposed to resolve them. Examples include equipment failure, weather delays, safety issues, and unanticipated effects to habitats or other species.

LOCATION 1

Target animals had anticipated behavioral recovery times for research/husbandry training when variables in their environment would change. Some of these variables included introduction to non-target animals and being separated from other target animals for medical assessments. Animals' behavior would be affected resulting in delayed response to trainers for a few sessions prompting trainers to pause training until behavior improved. These pauses would generally last 1-2 sessions after an environmental change.

Research sampling has been on hold since August 6, 2021.

LOCATION 2

Overall, the transport went off with very few challenges. Summary of challenges in Canada:

• Initial road travel plan (route) to Hamilton Airport was changed the evening prior due to an unexpected detour on the planned route. Canadian police were monitoring all events on road travel and alerted the Canadian team, so the route was adjusted with advance notice.

• Rollers on the C-130 to put the cradles on the plane, moved slower than anticipated, so, it took longer to load the 1st three animals. Resulted in a delayed takeoff than originally planned.

• The Pandemic posed numerous challenges for collecting and processing research samples in

Canada. Marineland had no infrastructure for processing and archiving samples. Although a back-up plan was put in place to take the samples to a laboratory at the University of Guelph (one hour from Marineland) for processing and archiving, Mystic Aquarium Research personnel were only allowed to travel from the airport to Marineland and vice versa due to Pandemic restrictions. Moreover, we were under the impression the whales had been trained for saliva, blood and blow but quickly came to realize there was a discrepancy with our training standards vs. what Marineland personnel considered trained behaviors. The whales were also difficult to access for sampling at Marineland.

What efforts did you make to coordinate with the applicable NMFS Regional Office(s) and collaborate with other researchers? How did you collaborate (for example, avoiding field work at the same time or working together on the same animals, sharing vessels, sharing data)?

LOCATION 1

A collaboration was set up with a colleague from the University of Guelph (1 hour away) to help with equipment and supplies for proper sample collection, processing and archive of pre-transport samples since the infrastructure was non-existent at Marineland.

At Mystic Aquarium, no external collaborations have occurred at this point in time given the need for training the whales as the first primary objective for all the research studies.

LOCATION 2

Mystic coordinated with NMFS by obtaining a minor permit amendment a few days before transport, to change the arrival airport from Hartford, CT to Groton, CT.

A collaboration was set up with a colleague from the University of Guelph to help with equipment and supplies for proper sample collection, processing and archive of pre-transport samples since the infrastructure was non-existent at Marineland.

Attachments

Application Archive - P22629_i22412T14Submitted.pdf (Added Nov 30, 2021)
Report - RP22412T4MYSTICSampleSummaryTable_Updated_xlsx.xlsx (Added Jun 3, 2022)

Report Status

Report Type: Annual
Report Status: Submitted
Start Date of report period: August 27, 2020
End date of report period: August 31, 2021
Date Due: June 10, 2022
Date Received: June 3, 2022
Submitted By: Gayle Sirpenski

Addendum Permit #22629

UPDATED: June 3, 2022

Annual Permit Report 11/31/2021

RESEARCH SAMPLE TAKE	SAMPLE NUMBER	SAMPLE DATE	NAME	NOAA ID	SAMPLE TIME	COLLECTION METHOD	NOTES
SALIVA	11	11-May-21	HAVANA	NOA0010675	10:40 AM	Behavioral "Training"	Pre-transport
SALIVA	13	12-May-21	HAVANA	NOA0010675	7:38 AM	Behavioral "Training"	Pre-Transport
MICROBIOME (swab)	22	12-May-21	HAVANA	NOA0010675	11:15 AM	Behavioral "Training"	Pre-Transport - Blowhole
BLOW	27	12-May-21	HAVANA	NOA0010675	2:20 PM	Behavioral "Training"	Pre-transport
BLOW	30	14-May-21	HAVANA	NOA0010675	6:15 PM	Restraint	Arrival at Groton Airport
BLOOD	33	14-May-21	HAVANA	NOA0010675	9:45 PM	Restraint	Arrival at Mystic Aquarium
SALIVA	35	14-May-21	HAVANA	NOA0010675	9:40 PM	Restraint	Arrival at Mystic Aquarium
BLOW	37	14-May-21	HAVANA	NOA0010675	9:41 PM	Restraint	Arrival at Mystic Aquarium
SALIVA	45	15-May-21	HAVANA	NOA0010675	1:20 AM	Behavioral "Training"	2 hour post
SALIVA	47	15-May-21	HAVANA	NOA0010675	3:18 AM	Behavioral "Training"	4 hour post
SALIVA	51	15-May-21	HAVANA	NOA0010675	5:44 AM	Behavioral "Training"	6 hour post
SALIVA	52	15-May-21	HAVANA	NOA0010675	11:30 AM	Behavioral "Training"	12 hour post
SALIVA	55	15-May-21	HAVANA	NOA0010675	9:40 AM	Behavioral "Training"	10 hour post
SALIVA	56	15-May-21	HAVANA	NOA0010675	5:50 PM	Behavioral "Training"	24 hour post
SALIVA	67	15-May-21	HAVANA	NOA0010675	10:30 PM	Behavioral "Training"	24 hour post
SALIVA	69	16-May-21	HAVANA	NOA0010675	5:20 AM	Behavioral "Training"	24 hour post
MICROBIOME (swab)	74	12-May-21	HAVANA	NOA0010675	11:15 AM	Behavioral "Training"	Pre-Transport - Oral
BLOW	78	14-May-21	HAVANA	NOA0010675	9:05 AM	Restraint	Pre-Transport
BLOW	79	14-May-21	HAVANA	NOA0010675	10:35 AM	Restraint	Pre-Transport
MICROBIOME (swab)	80	14-May-21	HAVANA	NOA0010675	10:30 AM	Restraint	Pre-Transport - Skin
MICROBIOME (swab)	84	12-May-21	HAVANA	NOA0010675	11:15 AM	Behavioral "Training"	Pre-Transport - Anal
SALIVA	86	21-May-21	HAVANA	NOA0010675	9:45 AM	Behavioral "Training"	Half swabs
SALIVA	95	25-May-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	possible water contamination
SALIVA	99	27-May-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Half swabs

SALIVA	107	3-Jun-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Half swabs
MICROBIOME (swab)	117	15-Jun-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	118	15-Jun-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	129	17-Jun-21	HAVANA	NOA0010675	3:30 PM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
BLOW	131	17-Jun-21	HAVANA	NOA0010675	3:30 PM	Behavioral "Training"	2 exhales
SALIVA	136	18-Jun-21	HAVANA	NOA0010675	7:00 AM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
MICROBIOME (swab)	148	24-Jun-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	149	24-Jun-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	151	25-Jun-21	HAVANA	NOA0010675	11:45 AM	Behavioral "Training"	
BLOW	162	8-Jul-21	HAVANA	NOA0010675	10:10 AM	Behavioral "Training"	3 exhales
MICROBIOME (swab)	168	15-Jul-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	169	15-Jul-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	175	16-Jul-21	HAVANA	NOA0010675	9:45 AM	Behavioral "Training"	Half swabs
BLOW	176	16-Jul-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	2 exhales
MICROBIOME (swab)	183	22-Jul-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	184	22-Jul-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Skin on melon
MICROBIOME (swab)	185	22-Jul-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Blow
SALIVA	199	3-Aug-21	HAVANA	NOA0010675	10:00 AM	Behavioral "Training"	Half swabs
BLOW	202	3-Aug-21	HAVANA	NOA0010675	9:40 AM	Behavioral "Training"	2 exhales
BLOOD	06	11-May-21	HAVANA	NOA0010675	10:45 AM	Behavioral "Training"	Pre-transport
BLOW	17	12-May-21	HAVANA	NOA0010675	11:30 AM	Behavioral "Training"	Pre-transport
BLOW	28	12-May-21	HAVANA	NOA0010675	8:05 AM	Behavioral "Training"	Pre-transport
SALIVA	15	12-May-21	HAVOK	NOA0010685	10:30 AM	Behavioral "Training"	Pre-Transport
BLOW	23	12-May-21	HAVOK	NOA0010685	3:05 PM	Behavioral "Training"	Pre-transport
BLOW	40	15-May-21	HAVOK	NOA0010685	4:10 AM	Restraint	Arrival at Mystic Aquarium
BLOOD	41	15-May-21	HAVOK	NOA0010685	4:12 AM	Restraint	Arrival at Mystic Aquarium
SALIVA	44	15-May-21	HAVOK	NOA0010685	4:10 AM	Restraint	Arrival at Mystic Aquarium
SALIVA	88	21-May-21	HAVOK	NOA0010685	9:45 AM	Behavioral "Training"	Half swabs
SALIVA	102	27-May-21	HAVOK	NOA0010685	10:00 AM	Behavioral "Training"	Half swabs
MICROBIOME (swab)	115	15-Jun-21	HAVOK	NOA0010685	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	116	15-Jun-21	HAVOK	NOA0010685	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	126	17-Jun-21	HAVOK	NOA0010685	3:30 PM	Behavioral "Training"	PRE INTRO INTO MAIN POOL

SALIVA	138	18-Jun-21	HAVOK	NOA0010685	7:00 AM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
MICROBIOME (swab)	142	24-Jun-21	HAVOK	NOA0010685	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	143	24-Jun-21	HAVOK	NOA0010685	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	150	25-Jun-21	HAVOK	NOA0010685	11:45 AM	Behavioral "Training"	
BLOW	163	14-Jul-21	HAVOK	NOA0010685	7:15 AM	Restraint	3 exhales
SALIVA	172	16-Jul-21	HAVOK	NOA0010685	9:45 AM	Behavioral "Training"	Half swabs
MICROBIOME (swab)	189	22-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Oral
MICROBIOME (swab)	190	22-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Skin
MICROBIOME (swab)	191	22-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Blowhole
MICROBIOME (swab)	192	27-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Oral
MICROBIOME (swab)	193	27-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Skin
MICROBIOME (swab)	194	27-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Blowhole
MICROBIOME (swab)	195	30-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Oral
MICROBIOME (swab)	196	30-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Skin
MICROBIOME (swab)	197	30-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Blowhole
MICROBIOME (swab)	198	30-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Anal
BLOOD	08	12-May-21	HAVOK	NOA0010685	10:35 AM	Behavioral "Training"	Pre-transport
BLOW	18	12-May-21	HAVOK	NOA0010685	10:40 AM	Behavioral "Training"	Pre-transport
BLOOD	N/A	1-Jun-21	HAVOK	NOA0010685	7:45 AM	Restraint	Health Assessment
BLOOD	N/A	7-Jun-21	HAVOK	NOA0010685	7:15 AM	Restraint	Health Assessment
BLOOD	N/A	30-Jun-21	HAVOK	NOA0010685	7:00 AM	Restraint	Health Assessment
BLOOD	N/A	14-Jul-21	HAVOK	NOA0010685	7:15 AM	Restraint	Health Assessment
BLOOD	N/A	1-Jul-21	HAVOK	NOA0010685	EARLY AM	Restraint	Health Assessment
BLOOD	N/A	16-Jul-21	HAVOK	NOA0010685	EARLY AM	Restraint	Health Assessment
BLOOD	N/A	19-Jul-21	HAVOK	NOA0010685	8:00 AM	Restraint	Health Assessment
BLOOD	N/A	22-Jul-21	HAVOK	NOA0010685	7:30 AM	Restraint	Health Assessment
BLOOD	N/A	27-Jul-21	HAVOK	NOA0010685	7:00 AM	Restraint	Health Assessment
BLOOD	N/A	30-Jul-21	HAVOK	NOA0010685	7:35 AM	Restraint	Health Assessment
BLOOD	N/A	6-Aug-21	HAVOK	NOA0010685	5:00pm	N/A	Necropsy
MICROBIOME (swab)	N/A	6-Aug-21	HAVOK	NOA0010685	5:00 PM	N/A	Necropsy
TISSUE - BRAIN	N/A	6-Aug-21	HAVOK	NOA0010685	3:00 PM	N/A	Necropsy
TISSUE - HEART	N/A	6-Aug-21	HAVOK	NOA0010685	3:35 PM	N/A	Necropsy

TISSUE - KIDNEY	N/A	6-Aug-21	HAVOK	NOA0010685	5:00 PM	N/A	Necropsy
TISSUE - LARGE INTEST	N/A	6-Aug-21	HAVOK	NOA0010685	5:00 PM	N/A	Necropsy
TISSUE - LIVER	N/A	6-Aug-21	HAVOK	NOA0010685	3:51 PM	N/A	Necropsy
TISSUE - LUNG	N/A	6-Aug-21	HAVOK	NOA0010685	3:35 PM	N/A	Necropsy
TISSUE - MESENTRIC LY	N/A	6-Aug-21	HAVOK	NOA0010685	4:15 PM	N/A	Necropsy
TISSUE - MUSCLE	N/A	6-Aug-21	HAVOK	NOA0010685	1:30 PM	N/A	Necropsy
TISSUE - PPAN	N/A	6-Aug-21	HAVOK	NOA0010685	5:00 PM	N/A	Necropsy
TISSUE - SKIN ANTERIO	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN ANTERIO	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN DORSAL	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN DORSAL	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN HEALTHY	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN LESION A	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN MID 1	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN MID 2	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN POSTERI(	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SKIN POSTERI(	N/A	6-Aug-21	HAVOK	NOA0010685	1:00 PM	N/A	Necropsy
TISSUE - SMALL INTEST	N/A	6-Aug-21	HAVOK	NOA0010685	5:00 PM	N/A	Necropsy
TISSUE - SPINAL CORD	N/A	6-Aug-21	HAVOK	NOA0010685	3:20 PM	N/A	Necropsy
TISSUE - SPLEEN	N/A	6-Aug-21	HAVOK	NOA0010685	3:57 PM	N/A	Necropsy
TISSUE - TESTIS	N/A	6-Aug-21	HAVOK	NOA0010685	4:30 PM	N/A	Necropsy
SALIVA	10	11-May-21	JETTA	NOA0010684	10:45 AM	Behavioral "Training"	Pre-transport
MICROBIOME (swab)	20	12-May-21	JETTA	NOA0010684	11:15 AM	Behavioral "Training"	Pre-Transport - Blow
BLOW	25	12-May-21	JETTA	NOA0010684	11:30 AM	Behavioral "Training"	Pre-transport
BLOW	26	12-May-21	JETTA	NOA0010684	2:20 PM	Behavioral "Training"	Pre-transport
BLOW	29	14-May-21	JETTA	NOA0010684	6:12 PM	Restraint	Arrival at Groton Airport
BLOOD	32	14-May-21	JETTA	NOA0010684	9:10 PM	Restraint	Arrival at Mystic Aquarium
BLOW	36	14-May-21	JETTA	NOA0010684	9:03 PM	Restraint	Arrival at Mystic Aquarium
MICROBIOME (swab)	63	12-May-21	JETTA	NOA0010684	11:15 AM	Behavioral "Training"	Pre-Transport - Blowhole
SALIVA	65	15-May-21	JETTA	NOA0010684	10:30 PM	Behavioral "Training"	24 hour post

MICROBIOME (swab)	70	12-May-21	JETTA	NOA0010684	11:15 AM	Behavioral "Training"	Pre-Transport - Oral
MICROBIOME (swab)	71	12-May-21	JETTA	NOA0010684	11:15 AM	Behavioral "Training"	Pre-Transport - Anal
BLOW	75	14-May-21	JETTA	NOA0010684	9:00 AM	Restraint	Pre-Transport
BLOW	76	14-May-21	JETTA	NOA0010684	10:30 AM	Restraint	Pre-Transport
MICROBIOME (swab)	77	14-May-21	JETTA	NOA0010684	10:30 AM	Restraint	Pre-Transport - Skin
SALIVA	85	21-May-21	JETTA	NOA0010684	9:45 AM	Behavioral "Training"	Half swabs
SALIVA	97	25-May-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	
SALIVA	103	27-May-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	
SALIVA	109	3-Jun-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Half swabs
BLOW	110	3-Jun-21	JETTA	NOA0010684	10:30 AM	Behavioral "Training"	2 exhales
MICROBIOME (swab)	119	15-Jun-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	120	15-Jun-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	125	17-Jun-21	JETTA	NOA0010684	3:30 PM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
BLOW	130	17-Jun-21	JETTA	NOA0010684	3:30 PM	Behavioral "Training"	2 exhales
SALIVA	139	18-Jun-21	JETTA	NOA0010684	7:00 AM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
MICROBIOME (swab)	144	24-Jun-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	145	24-Jun-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	152	25-Jun-21	JETTA	NOA0010684	11:45 AM	Behavioral "Training"	
MICROBIOME (swab)	164	15-Jul-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	165	15-Jul-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	177	16-Jul-21	JETTA	NOA0010684	9:45 AM	Behavioral "Training"	Half swabs
BLOW	178	16-Jul-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	2 exhales
MICROBIOME (swab)	186	22-Jul-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	187	22-Jul-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Skin on melon
MICROBIOME (swab)	188	22-Jul-21	JETTA	NOA0010684	10:00 AM	Behavioral "Training"	Blow
BLOOD	02	6-May-21	JETTA	NOA0010684	9:36 AM	Behavioral "Training"	Pre-transport
BLOOD	05	11-May-21	JETTA	NOA0010684	10:45 AM	Behavioral "Training"	Pre-transport
SALIVA	12	12-May-21	KHARABALI	NOA0010671	7:38 AM	Behavioral "Training"	Pre-Transport

MICROBIOME (swab)	19	12-May-21	KHARABALI	NOA0010671	11:15 AM	Behavioral "Training"	Pre-Transport - Blow
BLOW	24	12-May-21	KHARABALI	NOA0010671	2:20 PM	Behavioral "Training"	Pre-transport
BLOW	31	14-May-21	KHARABALI	NOA0010671	6:20 PM	Restraint	Arrival at Groton Airport
BLOOD	34	14-May-21	KHARABALI	NOA0010671	10:13 PM	Restraint	Arrival at Mystic Aquarium
BLOW	38	14-May-21	KHARABALI	NOA0010671	10:09 PM	Restraint	Arrival at Mystic Aquarium
BLOW	38	14-May-21	KHARABALI	NOA0010671	10:14 PM	Restraint	Arrival at Mystic Aquarium
SALIVA	48	15-May-21	KHARABALI	NOA0010671	3:20 AM	Behavioral "Training"	4 hour post
SALIVA	49	15-May-21	KHARABALI	NOA0010671	5:45 AM	Behavioral "Training"	6 hour post
SALIVA	53	15-May-21	KHARABALI	NOA0010671	11:35 AM	Behavioral "Training"	12 hour post
SALIVA	54	15-May-21	KHARABALI	NOA0010671	9:45 AM	Behavioral "Training"	10 hour post
MICROBIOME (swab)	58	15-May-21	KHARABALI	NOA0010671	10:30 PM	Behavioral "Training"	24h post - Oral
MICROBIOME (swab)	59	15-May-21	KHARABALI	NOA0010671	10:30 PM	Behavioral "Training"	24h post - Skin
MICROBIOME (swab)	62	12-May-21	KHARABALI	NOA0010671	11:15 AM	Behavioral "Training"	Pre-Transport - Oral
SALIVA	66	15-May-21	KHARABALI	NOA0010671	10:30 PM	Behavioral "Training"	24 hour post
BLOW	81	14-May-21	KHARABALI	NOA0010671	8:30 AM	Restraint	Pre-Transport
BLOW	82	14-May-21	KHARABALI	NOA0010671	10:45 AM	Restraint	Pre-Transport
MICROBIOME (swab)	83	14-May-21	KHARABALI	NOA0010671	10:30 AM	Restraint	Pre-Transport - Skin
SALIVA	87	21-May-21	KHARABALI	NOA0010671	9:45 AM	Behavioral "Training"	Half swabs
SALIVA	98	25-May-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	
SALIVA	101	27-May-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Half swabs
SALIVA	108	3-Jun-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Half swabs
BLOW	114	9-Jun-21	KHARABALI	NOA0010671	7:50 AM	Restraint	2 exhales
MICROBIOME (swab)	123	15-Jun-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	124	15-Jun-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	128	17-Jun-21	KHARABALI	NOA0010671	3:30 PM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
BLOW	132	17-Jun-21	KHARABALI	NOA0010671	3:30 PM	Behavioral "Training"	2 exhales
SALIVA	140	18-Jun-21	KHARABALI	NOA0010671	7:00 AM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
MICROBIOME (swab)	146	24-Jun-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Oral

MICROBIOME (swab)	147	24-Jun-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	154	25-Jun-21	KHARABALI	NOA0010671	11:45 AM	Behavioral "Training"	
MICROBIOME (swab)	170	15-Jul-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	171	15-Jul-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	174	16-Jul-21	KHARABALI	NOA0010671	9:45 AM	Behavioral "Training"	Half swabs
MICROBIOME (swab)	181	22-Jul-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	182	22-Jul-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	201	3-Aug-21	KHARABALI	NOA0010671	10:00 AM	Behavioral "Training"	Half swabs
BLOOD	01	6-May-21	KHARABALI	NOA0010671	9:42 AM	Behavioral "Training"	Pre-transport
BLOOD	07	11-May-21	KHARABALI	NOA0010671	11:15 AM	Behavioral "Training"	Pre-transport
BLOW	09	11-May-21	KHARABALI	NOA0010671	11:05 AM	Behavioral "Training"	Pre-transport
BLOW	16	12-May-21	KHARABALI	NOA0010671	11:30 AM	Behavioral "Training"	Pre-transport
BLOW	46	12-May-21	KHARABALI	NOA0010671	8:05 AM	Behavioral "Training"	Pre-transport
BLOOD	N/A	9-Jun-21	KHARABALI	NOA0010671	7:50 AM	Restraint	Health Assessment
SALIVA	14	12-May-21	SAHARA	NOA0010683	7:38 AM	Behavioral "Training"	Pre-Transport
MICROBIOME (swab)	21	12-May-21	SAHARA	NOA0010683	11:15 AM	Behavioral "Training"	Pre-Transport - Blowhole
MICROBIOME (swab)	22	12-May-21	SAHARA	NOA0010683	11:15 AM	Behavioral "Training"	Pre-Transport - Anal
BLOW	39	15-May-21	SAHARA	NOA0010683	3:15 AM	Restraint	Arrival at Groton Airport
BLOW	42	15-May-21	SAHARA	NOA0010683	4:37 AM	Restraint	Arrival at Mystic Aquarium
BLOOD	43	15-May-21	SAHARA	NOA0010683	4:40 AM	Restraint	Arrival at Mystic Aquarium
MICROBIOME (swab)	57	15-May-21	SAHARA	NOA0010683	10:30 PM	Behavioral "Training"	24h post - Oral
MICROBIOME (swab)	60	15-May-21	SAHARA	NOA0010683	10:30 PM	Behavioral "Training"	24h post - Oral
MICROBIOME (swab)	61	15-May-21	SAHARA	NOA0010683	10:30 PM	Behavioral "Training"	24h post - Skin
SALIVA	64	15-May-21	SAHARA	NOA0010683	10:30 PM	Behavioral "Training"	24 hour post
SALIVA	68	16-May-21	SAHARA	NOA0010683	5:24 AM	Behavioral "Training"	24 hour post
MICROBIOME (swab)	73	12-May-21	SAHARA	NOA0010683	11:15 AM	Behavioral "Training"	Pre-Transport - Oral
SALIVA	89	21-May-21	SAHARA	NOA0010683	9:45 AM	Behavioral "Training"	Half swabs
SALIVA	96	25-May-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	

SALIVA	100	27-May-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	
MICROBIOME (swab)	121	15-Jun-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	122	15-Jun-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	127	17-Jun-21	SAHARA	NOA0010683	3:30 PM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
SALIVA	137	18-Jun-21	SAHARA	NOA0010683	7:00 AM	Behavioral "Training"	PRE INTRO INTO MAIN POOL
SALIVA	153	25-Jun-21	SAHARA	NOA0010683	11:45 AM	Behavioral "Training"	
MICROBIOME (swab)	166	15-Jul-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	167	15-Jul-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	173	16-Jul-21	SAHARA	NOA0010683	9:45 AM	Behavioral "Training"	Half swabs
MICROBIOME (swab)	179	22-Jul-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	Oral
MICROBIOME (swab)	180	22-Jul-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	Skin on melon
SALIVA	200	3-Aug-21	SAHARA	NOA0010683	10:00 AM	Behavioral "Training"	Half swabs
BLOW	203	3-Aug-21	SAHARA	NOA0010683	9:40 AM	Behavioral "Training"	2 exhales
BLOOD	03	6-May-21	SAHARA	NOA0010683	9:48 AM	Behavioral "Training"	Pre-transport
BLOOD	04	11-May-21	SAHARA	NOA0010683	11:20 AM	Behavioral "Training"	Pre-transport
BLOOD	N/A	1-Jun-21	SAHARA	NOA0010683	6:30 AM	Restraint	Health Assessment
BLOOD	N/A	7-Jun-21	SAHARA	NOA0010683	7:15 AM	Restraint	Health Assessment
BLOOD	N/A	27-Jun-21	SAHARA	NOA0010683	9:00 AM	Restraint	Health Assessment
BLOOD	N/A	29-Jun-21	SAHARA	NOA0010683	7:15 AM	Restraint	Health Assessment
BLOOD	N/A	30-Jun-21	SAHARA	NOA0010683	7:00 AM	Restraint	Health Assessment
BLOOD	N/A	1-Jul-21	SAHARA	NOA0010683	EARLY AM	Restraint	Health Assessment
BLOOD	N/A	5-Jul-21	SAHARA	NOA0010683	EARLY AM	Restraint	Health Assessment
BLOOD	N/A	6-Jul-21	SAHARA	NOA0010683	8:00 AM	Restraint	Health Assessment

HEALTH ASSESSMENT ONLY SAMPLE TAKE	SAMPLE DATE	NAME	NOAA ID
BLOOD	27-May-21	HAVANA	NOA0010675
BLOOD	03-Jun-21	HAVANA	NOA0010675
BLOOD	10-Jun-21	HAVANA	NOA0010675
BLOOD	15-Jun-21	HAVANA	NOA0010675
BLOOD	23-Jun-21	HAVANA	NOA0010675
BLOOD	01-Jul-21	HAVANA	NOA0010675
BLOOD	16-Jul-21	HAVANA	NOA0010675
BLOOD	20-Jul-21	HAVANA	NOA0010675
BLOOD	28-Jul-21	HAVANA	NOA0010675
BLOOD	04-Aug-21	HAVANA	NOA0010675
BLOOD	16-Aug-21	HAVANA	NOA0010675
BLOOD	23-Aug-21	HAVANA	NOA0010675
BLOOD	30-Aug-21	HAVANA	NOA0010675
BLOOD	26-May-21	JETTA	NOA0010684
BLOOD	28-May-21	JETTA	NOA0010684
BLOOD	04-Jun-21	JETTA	NOA0010684
BLOOD	08-Jun-21	JETTA	NOA0010684
BLOOD	09-Jun-21	JETTA	NOA0010684
BLOOD	16-Jun-21	JETTA	NOA0010684
BLOOD	28-Jun-21	JETTA	NOA0010684
BLOOD	07-Jul-21	JETTA	NOA0010684
BLOOD	20-Jul-21	JETTA	NOA0010684
BLOOD	29-Jul-21	JETTA	NOA0010684
BLOOD	31-Jul-21	JETTA	NOA0010684
BLOOD	2-Aug-21	JETTA	NOA0010684

BLOOD	6-Aug-21	JETTA	NOA0010684
BLOOD	7-Aug-21	JETTA	NOA0010684
BLOOD	10-Aug-21	JETTA	NOA0010684
BLOOD	12-Aug-21	JETTA	NOA0010684
BLOOD	14-Aug-21	JETTA	NOA0010684
BLOOD	16-Aug-21	JETTA	NOA0010684
BLOOD	19-Aug-21	JETTA	NOA0010684
BLOOD	19-Aug-21	JETTA	NOA0010684
BLOOD	21-Aug-21	JETTA	NOA0010684
BLOOD	24-Aug-21	JETTA	NOA0010684
BLOOD	25-Aug-21	JETTA	NOA0010684
BLOOD	26-Aug-21	JETTA	NOA0010684
BLOOD	27-Aug-21	JETTA	NOA0010684
BLOOD	28-Aug-21	JETTA	NOA0010684
BLOOD	31-Aug-21	JETTA	NOA0010684
BLOOD	04-Jun-21	KHARABALI	NOA0010671
BLOOD	22-Jun-21	KHARABALI	NOA0010671
BLOOD	22-Jun-21	KHARABALI	NOA0010671
BLOOD	28-Jun-21	KHARABALI	NOA0010671
BLOOD	05-Jul-21	KHARABALI	NOA0010671
BLOOD	22-Jul-21	KHARABALI	NOA0010671
BLOOD	04-Aug-21	KHARABALI	NOA0010671
BLOOD	12-Aug-21	KHARABALI	NOA0010671
BLOOD	23-Aug-21	KHARABALI	NOA0010671
BLOOD	30-Aug-21	KHARABALI	NOA0010671
BLOOD	26-May-21	SAHARA	NOA0010683
BLOOD	02-Jul-21	SAHARA	NOA0010684

BLOOD	08-Jul-21	SAHARA	NOA0010685
BLOOD	12-Jul-21	SAHARA	NOA0010686
BLOOD	7-Aug-21	SAHARA	NOA0010687
BLOOD	23-Aug-21	SAHARA	NOA0010688
BLOOD	12-Jul-21	HAVOK	NOA0010685
BLOOD	13-Jul-21	HAVOK	NOA0010685
BLOOD	15-Jul-21	HAVOK	NOA0010685
BLOOD	20-Jul-21	HAVOK	NOA0010685
BLOOD	3-Aug-21	HAVOK	NOA0010685
BLOOD	3-Aug-21	HAVOK	NOA0010685
BLOOD	4-Aug-21	HAVOK	NOA0010685
FECAL	23-Aug-21	JETTA	NOA0010684
FECAL	24-Aug-21	JETTA	NOA0010684
GASTRIC	7-Aug-21	JETTA	NOA0010685
GASTRIC	19-Aug-21	JETTA	NOA0010686
GASTRIC	19-Aug-21	JETTA	NOA0010687
GASTRIC	20-Aug-21	JETTA	NOA0010688
GASTRIC	23-Aug-21	JETTA	NOA0010689
GASTRIC	23-Aug-21	JETTA	NOA0010690
GASTRIC	25-Aug-21	JETTA	NOA0010691
GASTRIC	26-Aug-21	JETTA	NOA0010692
GASTRIC	9-Jun-21	KHARABALI	NOA0010671
GASTRIC	01-Jun-21	SAHARA	NOA0010683
GASTRIC	29-Jun-21	SAHARA	NOA0010683
GASTRIC	30-Jun-21	SAHARA	NOA0010683
GASTRIC	01-Jul-21	SAHARA	NOA0010683
GASTRIC	02-Jul-21	SAHARA	NOA0010683

GASTRIC	02-Jul-21	SAHARA	NOA0010683
GASTRIC	06-Jul-21	SAHARA	NOA0010683
GASTRIC	07-Jul-21	SAHARA	NOA0010683
GASTRIC	08-Jul-21	SAHARA	NOA0010683
GASTRIC	12-Jul-21	SAHARA	NOA0010683
GASTRIC	07-Aug-21	SAHARA	NOA0010683
GASTRIC	12-Aug-21	SAHARA	NOA0010683
URINE	30-Jun-21	SAHARA	NOA0010684
FECAL	30-Jun-21	SAHARA	NOA0010685
FECAL	1-Jul-21	SAHARA	NOA0010686
FECAL	30-Jun-21	SAHARA	NOA0010687
FECAL	30-Jun-21	SAHARA	NOA0010688
FECAL	5-Jul-21	SAHARA	NOA0010689
FECAL	7-Jul-21	SAHARA	NOA0010690