

A field effort to capture critically endangered vaquitas *Phocoena sinus* for protection from entanglement in illegal gillnets

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Table S1. Timeline of events following capture of vaquita V01F.

Time	Event	Heart rate per minute	Breaths per minute
10:15	Net set near observed vaquitas		
10:56	Animal hit net		
11:00	Animal brought on board capture RHIB , placed into transport box on stretcher, measured as 105 cm long, estimated weight 20 kg		
11:01	Diazepam 4 mg injected IM (0.2 mg/kg)	150	15
11:04	Diazepam 4 mg injected IM (0.2 mg/kg)		
11:23	Boat driving to shore started		10
11:30	3.6 mg diazepam injected IM (0.18 mg/kg)		
11:39		120	8
11:41		150	
11:46			7
11:48		150	
12:02			8
12:06		130	
12:11			6
12:19	Reached beach, lifted the animal on the stretcher out of the transport box on boat moved to transport box on the beach		
12:22	Transport box set on ground adjacent to the soft sided land pool		
12:24	Animals lifted on stretcher into pool		
12:26	Animal removed from stretcher and placed on a floating foam mat at surface of pool		
12:27	Animal on mat supported by people who walked it around the pool	120-160	
12:28	Diazepam 3.6 mg injected IM (0.18 mg/kg)		
12:29	Removed from mat, supported by hand, moved through water at surface		2
12:34	White foam from blow hole on expiration. Methylprednisolone sodium succinate 75 mg IM (3.8 mg/kg)		
12:35	Released to swim freely in sectioned off area of the pool		
12:37	Hugging the side of the pool and breathing at the edge of the pool under the rim		15
12:40	Needs assistance under the pool rim to breathe, collides with crowding net		15
12:42	Beginning to avoid far corner of pool and crowding net on occasion		
12:46	Crowding net removed to allow full length of pool		
13:18	Furosemide 120 mg injected IM (6 mg/kg)		
13:38	Transported to sea pen in stretcher		15
13:41	In sea pen, first arched dive rather than previous surface swimming. Swims mostly at surface in a straight line, attempts to swim into the wall net until redirected.	120	
13:53			10
13:55	First deep dive		
13:57			10
14:10	Started transport back to refuge for release		
14:15-14:22	In stretcher within transport box on <i>panga</i> (artisanal fishing boat)	140-160	7
14:24	Blood collected, chuffing repeatedly about 3 sec apart		20
14:29		150	
14:31-14:47	Head arching	120-150	7
14:50	Moved from <i>panga</i> to RHIB		
15:07	Alcohol scrub, lidocaine with epinephrine ring block for biopsy in skin		
15:10	Skin punch biopsy caudal to base of dorsal fin on right side. Blood collected from fluke vein		
15:17	Morphometrics collected. Total length 102 cm, fluke width 36 cm		
15:21	Lifted out of stretcher and placed in water beside the boat		10
15:22-16:00	Swimming at surface, frequent spy hopping, until lost sight of animal		10

Table S2. Timeline of events following capture of vaquita V02F.

Time	Event	Heart rate per minute	Breaths per minute
15:58	Net set, animals observed		
16:18	Animal entangled in net, swimming at surface		
16:21	Animal removed from the net and placed into stretcher on RHIB		
16:24	Animal transferred by stretcher to a foam pad		
16:26	Diazepam 7 mg IM (0.175 mg/kg)		
16:29	Animal transferred to the animal transport container on the Defender (transport vessel provided by Mexican Navy)		
16:36	Heart rate fast, no sinus arrhythmia	120-130	6
16:43	Animal placed over starboard side of Defender in stretcher while attempts to capture second animal continued		
16:50	Diagnostic ultrasound examination: both lung fields normal; no evidence of pregnancy during abbreviated reproductive exam		
17:00	Prepared dorsal fin for possible satellite-linked tag placement		
17:08	Diagnostic ultrasound: evidence of alveolar interstitial syndrome in ventral lung fields, bilateral		
17:10	Intermittent shallow respirations		
17:14	Methylprednisolone 200 mg IM (5 mg/kg)		
17:16	Furosemide 40 mg IM (1 mg/kg) for suspected pulmonary edema		
17:22	Diagnostic ultrasound: improvement in left lung fields; little change in right lung fields		
17:25	Jet boat approached port side, animal arched and opened mouth; considered release; however, animal quickly recovered		
17:27	Furosemide 40 mg IM (1 mg/kg) for suspected pulmonary edema		
17:33	Palpated animal for evidence of lactation; none found		
17:35	Moved animal into animal transport container; second animal was no longer in vicinity of capture crew		
17:40	Diagnostic ultrasound: AIS resolved in both lungs; full bladder; kidneys normal; uterus prominent but no evidence of pregnancy		
17:42		120	6
17:45	Began transport; some mild arching but then improved; animal gently swimming in transport container		
18:02	Blood collected for I-Stat		
18:09	Mild arching, boat speed reduced and cooler water added to transport container; arching subsided after several minutes		
18:20	Diagnostic ultrasound examination: Lungs normal		
18:29	Blood sampling attempted and unsuccessful from dorsal fluke		
18:42	Cefovecin (320 mg SQ) administered as prophylactic antibiotic to protect against pulmonary infection		
18:43	Animal transported in stretcher and released into 9 m sea-pen		
18:44	Animal swimming excitedly and running into sides at high speed		
18:49	Diazepam 7 mg IM (0.17 mg/kg)		
18:52	Animal began avoiding the sides of the pool		
18:57	Animal began to slow down significantly		
19:00	Animal swimming in tight circles at surface, changing directions		7
19:11	Animal continued to swim very slowly, quiet, minimal response to a person entering pool		
19:24	Animal became abnormally relaxed and respirations slowed		
19:25	Animal began to flex but became apneic; doxapram 40 mg IM (1 mg/kg) and flumazenil 0.05 mg IM (0.00125 mg/kg)		
19:27-19:29	Animal was passed to handlers in the water on the outside of the pool and released; following release, animal swam rapidly away at the surface and then returned to the sea-pen swimming at the surface; handlers immediately recaptured her, no breathing but had a faint heart beat (on palpation); animal held at the surface while doxapram 40 mg IM (1 mg/kg) was administered		0

Time	Event	Heart rate per minute	Breaths per minute
19:34	Following no response to doxapram or manual manipulation of the animal's mouth and throat, she was placed on the deck of the vessel; no heartbeat could be palpated	0	0
19:35	Animal was intubated and oxygen delivery began using emergency oxygen kit with equine demand valve; chest compressions were immediately initiated following intubation; atropine 2 mg IM		
19:36	Heartbeat restarted and chest compressions discontinued; ventilation continued; repeat dose of methylprednisolone IM (200 mg) administered	70-110	
19:38	Animal extubated and re-intubated with a larger endotracheal tube (7.5 mm) to optimize oxygen administration		
19:46	Blood was sampled for iStat analysis and archive		
19:55	Skin biopsy punch was collected from the animal's dorsal fin, sample placed in transport media for cell culture		
20:03	Positive pupillary light reflex		
20:08	Doxapram 40 mg IV (1 mg/kg)		
20:10	Sodium bicarbonate slowly administered IV (10 mEq)		
20:11	Animal began to show signs of increased awareness, moving body and improving jaw tone, but no spontaneous respiration		
20:12	Animal's heart rate began to drop (70 bpm), repeat dose of atropine was administered IM (0.9 mg), after which heart rate increased	70	
20:15	Animal continued increased movement, including some jaw movement; the boat moved to Campo Uno to retrieve fluids		
20:17-20:21	Blood sampled, IV fluid (normal saline) initiated	100-120	
20:41	Administered repeat dose of doxapram IV (40 mg); another blood sample collected for iStat measurement	120	
20:45	Rototag placed on dorsal fin; orange #72		
20:47	Sodium bicarbonate administered IV (10mEq); soon after animal became more responsive and had increased jaw tone		
20:51-21:02	Animal intermittently tested for spontaneous respirations; none occurred, opening and closing eyelids, swallowing		
21:04	Animal switched from oxygen to ambient air with use of ambulatory bag; auscultation of lungs confirmed normal lung sounds bilaterally with use of ambulatory bag		
21:09	Diazepam 7 mg IV		
21:10	Animal spontaneously ventilated through the endotracheal tube; animal was extubated to see if intubation was suppressing spontaneous respiration		
21:10-21:13	Animal did not have control over its blowhole and was unable to effectively breathe; reintubated, breathed spontaneously several times then stopped	120	
21:21	Animal had eyelid movement and regained palpebral response		
21:25	Doxapram 40 mg IV (1 mg/kg)		
21:30	Rectal temperature 34.8° C		
21:39-21:45	Spontaneous ventilation through ET tube with minimal blowhole movement, lung auscultation was within normal limits bilaterally; subcutaneous fluid administration began (normal saline, total volume 180 cc)		
21:52	Rectal temperature 35.0 C; total volume of fluids administered 300 IV plus 120 SQ normal saline		
21:55-22:05	More spontaneous breathing through endotracheal tube, only partially effective; first observation of tongue movement		
21:55-22:08	Extubated animal to test ability to effectively breathe on own, but animal was unable to gain proper control over blowhole and unable to effectively breathe, reintubated		
22:10	Cardiac arrest, began chest compressions		
22:12-22:15	Epinephrine administered IT (2mg) with no response, followed by epinephrine IC (4mg, then an additional 2mg) with a positive response; HR increased from 30bpm and increased until it stabilized at 90bpm	0-90	
22:16	Cardiac arrest, pupils fixed dilated; animal flaccid; no corneal reflex; no other reflexes present		
22:21	Animal declared dead		

Table S3. Hematology, serum chemistry parameters in serum samples from vaquitas V01F and V02F. CKmm creatine kinase is isoenzyme found predominantly in skeletal muscle and heart, CK mb found predominantly in heart, CKbb found predominantly in brain.

Time sampled	V01F	V02F		
	14:30	18:30	20:00	20:24
RBC M/ μ L	5.6	5.44	5.68	
Hemoglobin g/dL	19.1	19	20.3	
Hematocrit %	55.1	58.1	60.2	
MCV fL	98.3	106.9	106	
MCH pg	35.3	35	35.7	
MCHC g/dL	35.9	32.8	33.7	
RDW %	13.5	13.1	12.9	
Platelet K/ μ L	138	137	128	
MPV fL	10.1	13.9	13.7	
Reticulocyte %	2.26	1.17	1.25	
WBC K/ μ L	1.47	4.95	4.88	
Neutrophils %	92	60	62	
Bands %		4	2	
Lymphocytes %	5	23	27	
Monocytes %	1	5	4	
Eosinophils %	2	8	5	
Basophils %	0	0	0	
Glucose mg/dL	111		194	198
BUN mg/dL	48.5		73.7	71.6
Creatinine mg/dL	1.1		1.3	1.3
Tbili mg/dL	0.6		0.2	0.2
Cholesterol mg/dL	230		464	468
Triglycerides mg/dL	101		138	134
Total Protein g/dL	5.9		7.9	8.1
Albumin g/dL	4.6		4.1	4.2
Globulin g/dL	1.3		3.8	3.9
ALP U/L	583		75	77
ALT U/L	43		119	126
AST U/L	288		290	301
GGT U/L			32	33
CPK U/L	4,244		3,646	2,182
CK mm			2,770	
CK mb			165	
CK bb			716	
LDH U/L	1,919		852	862
Calcium mg/dL	11.3		10.5	10.7
Phosphorus mg/dL	6.3		7.3	7.5
Sodium mEq/L	163		164	164
Potassium mEq/L	4.3		4.6	4.6
Chloride mEq/L	127		104	106
Carbon Dioxide mEq/L				13
Iron mcg/dL	402		285	287
Lactate	1.28			
Progesterone ng/mL				5.05
Cortisol μ g/dL	23.4			150
Aldosterone pg/mL				236.66
T3 ng/dL				154
T4 μ g/dL				14.9
FT4 ng/dL				1.75
Epinephrine pg/mL				31,614.6
Norepinephrine pg/mL				1,790.6
Dopamine pg/mL				16.52