



United States Department of the Interior

U. S. FISH AND WILDLIFE SERVICE

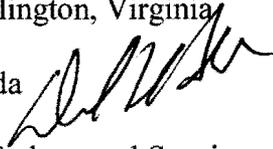
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IN REPLY REFER TO:

May 12, 2009

Memorandum

To: Chief, Branch of Permits, Office of Management Authority, Arlington, Virginia

From: Field Supervisor, Jacksonville Field Office, Jacksonville, Florida 

Subject: Calendar Year 2008 Annual Report for Marine Mammal and Endangered Species Permit PRT 770191

Manatee rescue, rehabilitation, and release activities are authorized under the Marine Mammal and Endangered Species Permit PRT 770191, issued to the Field Supervisor in the U. S. Fish and Wildlife Service's Jacksonville Field Office. This permit was reauthorized on March 4, 2005, and expires March 4, 2010.

During 2008, the Service's Jacksonville Field Office and program participants holding Letters of Authorization from the Service were involved in the following manatee activities:

Summary of rescues and releases: Program participants were contacted by the public to verify the status of hundreds of manatees believed to be in need of assistance. A total of 96 manatees were rescued this year (see attached Rescue Report), which is the highest number of rescues on record since the program began in 1973 (see attached Rescue graph). Of the total rescues, 54 were brought into captivity for further medical attention and 37 were treated onsite and released. Three animals were caught incidentally in turtle research nets and subsequently released without harm. Two rescues were categorized as unsuccessful, in which the animals escaped during a rescue attempt and did not receive assistance. Reasons for rescue (see attached Manatee Rescue, Rehabilitation and Release Program Report 2008 for detailed causes of rescue) included natural causes (37), entanglements (23), watercraft strikes (19), entrapments (10), calves with injured dams (3), mothers of injured calves (2) and relocations (2). Of the 54 manatees brought into captivity, 11 were released back into the wild (see attached Release Report), 30 died (one animal was released and subsequently died; see attached Death Report) and 14 remain in captivity (see Facility Inventory Report) receiving further medical treatment and rehabilitation.

Captive animals: At the year's end, 54 manatees in 12 authorized facilities were in captivity for medical treatment and rehabilitation with long-term care (see attached Facility Inventory Report). Captive animals consisted of 30 females and 24 males comprised of 32 adults, 9

juveniles and 13 calves. Four captive manatees are known as "pre-Act" because they were obtained for display purposes prior to the enactment of the Endangered Species Act.

Releases: Last year 20 manatees were released (see attached Release Report and Release graph), of which 9 were rescued prior to January 1, 2008. All animals released were PIT-tagged and photo identified; individuals without distinguishing marks (e.g., body mutilations) were freeze-branded to facilitate identification in the wild. Radio and satellite tags were attached to five released individuals to monitor adaptation to the wild. Four animals were released at Blue Springs and one at Crystal River. Three of the individuals were monitored throughout the year and returned to the springs where they were released for the winter months. One animal died mid-year due to the ingestion of fishing gear and the whereabouts of the other animal is currently unknown. The Manatee Rehabilitation Partnership, a sub-group of the Facility Management Team, in conjunction with the Service, coordinates the post-release monitoring.

Transfers: Two manatees were transferred in 2008 (see attached Transfer Report). Transfers were necessary to make room at critical care facilities (1) and provide a staging area for a pending release (1).

Births: No births occurred in any facilities holding captive manatees during 2008, as supported in the Service's Controlled Propagation Policy.

Deaths: Thirty-three manatees died within the program during 2008 (see attached Death Report). Of these, 30 were individuals rescued in 2008, while three were animals rescued in previous years. Deaths occurred while in captivity undergoing treatment/rehabilitation (17), during transport (8), following release into the wild (5), following unsuccessful rescue attempts (2) and during rescue (1). Causes of death included natural (17), watercraft (12), entanglement (2), entrapment (1) and one cause of death that could not be determined (see attached Manatee Rescue, Rehabilitation and Release Program Report 2008 for detailed causes of death).

Facilities: A total of 21 organizations/facilities hold a Letter of Authorization (LOA) to participate in manatee rescue, rehabilitation and release activities. Currently 12 facilities have a LOA to hold manatees, including a new partner, the Mayaguez Zoo, which has been given authorization to conduct critical care. Two additional partners were given an LOA in 2008, the Jacksonville Zoo (to verify and transport) and Volusia County (to verify).

Program meetings: Two program meetings were held during 2008 with the Facility Management Team. The spring meeting was held at SeaWorld Orlando, while the fall meeting was held at South Florida Museum. Agenda items included: updates on health and distribution of all captive manatees; rescue, release and transfer planning and reporting; post-release monitoring updates; death reports; relevant captive program research; release guidelines; future release location planning and papilloma virus. The annual meeting for facility veterinarians was held in March at SeaWorld Orlando; discussion topics included: individual manatee case studies; post-release monitoring health assessments; research topics related to manatee health; medical treatments and protocols; non-releasable manatee guidance and papilloma virus.

Papilloma virus: In 1997 papilloma virus (PV) was discovered on captive manatees residing in Homosassa Springs Wildlife State Park. Due to the unknown impact of the virus on captive and wild animals, a quarantine was maintained at all facilities possessing manatees exposed to PV. In 1998, similar lesions appeared in wild manatees outside the park; however, it was not determined with certainty that these lesions contained PV. As a result, increased monitoring efforts were implemented for wild animals rescued within the program and carcasses brought to the State's pathobiology lab. An epidemiology study was also initiated in the fall of 2004 for PV in wild manatees residing in the Homosassa and Crystal Rivers region. To date, all biopsies from wild animals have tested negative for the virus.

During 2003, scientists from Harbor Branch Oceanographic Institute, Brown Cancer Center and the University of Louisville School of Medicine, Louisville, Kentucky sequenced the entire manatee PV (now officially designated as TmPV-1). The Institute produced a vaccine for PV and an ELISA test to determine exposure to the virus. A study was planned to assess the vaccine and validate the ELISA on infected captive manatees at Homosassa; however, due to lack of funding, this project was never initiated.

In the spring of 2008, a recommendation was made to the Service to use existing ELISA methodology to determine the existence of PV in free-ranging manatees. This recommendation resulted in a joint effort among partners within the program and the James Graham Brown Cancer Center. Fresh samples were collected from all captive manatees (held in captivity for > 1 month) and archived samples obtained from wild manatees in all four designated management units in Florida and in Belize. Results from the study at the most conservative levels revealed free-ranging manatees have been exposed to PV (Dona *et al.* in review). Additionally, this work supported the established theories that PV co-evolved with the species and that manatees can host latent PV infections which, under certain conditions where a co-factor is present, can become active and eventually non-lethal lesions are presented.

The research from Dona and colleagues resulted in the necessary scientific evidence to validate the presence of PV in the wild. In December 2008, the Service sent a memorandum to its partners supporting the release of captive manatees that are free of PV lesions, and have been free from lesions or any contact with animals possessing lesions for at least six months (see attached Memorandum). Although current evidence suggests PV does not pose a threat to the manatee population, the Service will continue to support research to enhance our understanding of this virus. It is believed wild, healthy manatees have the ability to resolve PV on their own. Monitoring of both the captive and wild populations will continue to ensure that any changes within the wild manatee population are promptly addressed and evaluated.

Currently there are six facilities that hold 21 PV exposed manatees: SeaWorld Orlando, SeaWorld San Diego, Cincinnati Zoo, Columbus Zoo, Disney's Living Seas and Homosassa Springs Wildlife State Park. Animals that are currently under quarantine at these facilities will now become release candidates once they are medically cleared and free of lesions or lesion exposure for six months.

Enclosures

cc: Dave Flemming

2008 RESCUES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>RESCUE DATE</i>	<i>RESCUE TYPE</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RESCUE COUNTY</i>	<i>TRANSPORTED TO</i>
Ana Lucia	F	SWFTm0801B	RNE0801	01 03 2008	Brought into captivity	565	230	Duval	SeaWorld
	M	SWFTm0802B	RNE0802	01 07 2008	Brought into captivity	395	213	Duval	SeaWorld
Curlew Creek	M	RNW0801	102470	01 11 2008	Brought into captivity	380	214	Pinellas	Lowry Park Zoo
	N/D	RSE0801		01 17 2008	Assist/release		215	Broward	
Libby	F	SWFTm0803B	RNE0803	01 18 2008	Brought into captivity	395	204	Duval	SeaWorld
Sawyer	M	SWFTm0804B	RNE0804	01 18 2008	Brought into captivity	415	197	Duval	SeaWorld
	N/D	CR0803		01 22 2008	Assist/release	0	0	Citrus	
Kennedy	M	REC0801	SWFTm0805B	01 26 2008	Brought into captivity	308	197	Brevard	SeaWorld
	M	RSE0802		01 28 2008	Assist/release		235	St. Lucie	

2008 RESCUES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>RESCUE DATE</i>	<i>RESCUE TYPE</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RESCUE COUNTY</i>	<i>TRANSPORTED TO</i>
Frenchie	M	RSE0803	MSTm0801	01 29 2008	Brought into captivity	348	208	Palm Beach	Miami Seaquarium
	N/D	CR0805		02 01 2008	Assist/release	0	0	Citrus	
Una	F	REC0803	SWFTm0338B	02 01 2008	Assist/release	820	260	Volusia	
	N/D	RSE0804		02 01 2008	Assist/release		240	Broward	
Brady	M	RNW0802	102481	02 04 2008	Brought into captivity	420	217	Manatee	Lowry Park Zoo
	F	REC0802	SWFTm0806B	02 05 2008	Brought into captivity	272	192	Brevard	SeaWorld
UPC	M	RNW0803	102482	02 12 2008	Brought into captivity	510	229	Wakulla	Lowry Park Zoo
Baby Sister	F	102484	CR0807	02 13 2008	Brought into captivity	255	190	Citrus	Lowry Park Zoo
	F	SWFTm0807B	REC0804	02 19 2008	Brought into captivity	1250	293	Volusia	SeaWorld

2008 RESCUES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>RESCUE DATE</i>	<i>RESCUE TYPE</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RESCUE COUNTY</i>	<i>TRANSPORTED TO</i>
Diamond	M	SWFTm0808B	REC0805	02 19 2008	Brought into captivity	1090	294	Volusia	SeaWorld
Sharpie	M	RSE0805	MSTm0802	02 25 2008	Brought into captivity	525	224	Monroe	Miami Seaquarium
Hurricane	M	SWFTm0809B	REC0806	03 01 2008	Assist/release	0	323	Volusia	
	N/D	RNE0805		03 10 2008	Assist/release	0	257	St. Johns	
	F	RSE0806	MSE0814	03 27 2008	Brought into captivity	218	171	St. Lucie	SeaWorld
Clyde	M	RSE0807		04 07 2008	Assist/release	230	172	Monroe	
Bonnie	F	RSE0808	RSE9903	04 07 2008	Assist/release	0	287	Monroe	
Little Nap	M	RSW0801	102524	04 07 2008	Brought into captivity	174	150	Collier	Lowry Park Zoo
Forge	M	RSW0802	102534	04 13 2008	Brought into captivity	510	232	Sarasota	Lowry Park Zoo

2008 RESCUES

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Hurricane	M	SWFTm0810B	REC0807	04 14 2008	Assist/release		324	Seminole	
	N/D	CR0810		04 22 2008	Assist/release	0	0	Citrus	
	N/D	REC0808		04 22 2008	Incidental Rescue	0	215	Brevard	
Gymnastics Chicken	F	RSW0308	102538	04 24 2008	Brought into captivity	1625	343	Collier	Lowry Park Zoo
Chicken Little	M	RSW0804	102539	04 24 2008	Brought into captivity	69	115	Collier	Lowry Park Zoo
	N/D	RNE0806		04 30 2008	Assist/release	0	190	Clay	
Hurley	M	REC0810	SWFTm0812B	05 03 2008	Brought into captivity	66	119	Volusia	SeaWorld
	N/D	RSW0806	ENP0801	05 03 2008	Incidental rescue	0	150	Monroe	
Desmond	M	SWFTm0811B	REC0809	05 03 2008	Brought into captivity	54	120	Indian River	SeaWorld

2008 RESCUES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>RESCUE DATE</i>	<i>RESCUE TYPE</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RESCUE COUNTY</i>	<i>TRANSPORTED TO</i>
Prosperity	F	RSE0809	MSTm0803	05 04 2008	Brought into captivity	468	263	Palm Beach	Miami Seaquarium
	M	REC0811	MEC0831	05 05 2008	Brought into captivity	33	95	Brevard	
	F	REC0812		05 09 2008	Assist/release	0	305	Brevard	
	N/D	RNW0804		05 11 2008	Assist/release	0	185	Citrus	
	N/D	RNW0805		05 11 2008	Assist/release	0	150	Hillsborough	
	N/D	RSW0805		05 14 2008	Assist/release	0	245	Charlotte	
	F	SWFTm0813B	REC0813	05 16 2008	Brought into captivity	940	271	Volusia	SeaWorld
	M	SWFTm0814B	REC0814	05 16 2008	Brought into captivity	59	111	Volusia	SeaWorld
	N/D	RNE0807		05 18 2008	Assist/release	0	230	Volusia	

2008 RESCUES

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	N/D	RNE0808		05 18 2008	Assist/release	0	0	Volusia	
Hurricane	M	REC0815	MSQ-11	05 20 2008	Incidental Rescue		323	Volusia	
	N/D	RNE0809		05 20 2008	Assist/release	0	0	Flagler	
	M	RSE0811	MSE0817	05 25 2008	Unsuccessful rescue		326	Martin	
Frannie	F	RNW0806	102582	06 05 2008	Brought into captivity	525	223	Pinellas	Lowry Park Zoo
	F	RNW0807		06 15 2008	Assist/release		254	Pinellas	
Kiandra	F	RSE0810	MSTm0804	06 15 2008	Brought into captivity	65	123	Monroe	Miami Seaquarium
	N/D	RNE0810		06 26 2008	Assist/release		215	Duval	
Pete	F	RNW0808	102593	06 27 2008	Brought into captivity	1030	283	Citrus	Lowry Park Zoo

2008 RESCUES

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Repeat	F	RNW0809	102594	06 27 2008	Brought into captivity	155	155	Citrus	Lowry Park Zoo
	M	REC0816	MEC0853	06 30 2008	Brought into captivity	55	119	Brevard	
	M	RSW0807	102597	07 03 2008	Brought into captivity	820	287	Collier	Lowry Park Zoo
Penny	F	SWFTm0816B	REC0817	07 03 2008	Brought into captivity	677	257	Brevard	SeaWorld
	F	SWFTm0817B	RNE0811	07 23 2008	Brought into captivity	21	77	Volusia	SeaWorld
	N/D	RNW0810		07 30 2008	Assist/release		300	Citrus	
Guailf	M	DRN0008		08 07 2008	Brought into captivity	53	120	Other	Mayaquez Zoo
Sassy	F	RNW0811	102625	08 08 2008	Brought into captivity	645	241	Citrus	Lowry Park Zoo
	M	RSW0808	MSW0862	08 23 2008	Brought into captivity	636	236	Lee	Lowry Park Zoo

2008 RESCUES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>RESCUE DATE</i>	<i>RESCUE TYPE</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RESCUE COUNTY</i>	<i>TRANSPORTED TO</i>
	M	RNW0812		08 28 2008	Assist/release	0	280	Manatee	
	M	RNW0813		08 28 2008	Assist/release	0	250	Manatee	
	M	RNW0814		08 28 2008	Assist/release	0	280	Manatee	
	M	RNW0815		08 28 2008	Assist/release	0	300	Manatee	
	M	SWFTm0820B	RNE0812	08 28 2008	Brought into captivity	645	260	Volusia	SeaWorld
	F	REC0818	SWFTm0822B	09 07 2008	Assist/release	0	305	Brevard	
	M	SWFTm0823B	REC0819	09 07 2008	Assist/release	500	245	Brevard	
	F	RSE0812		09 11 2008	Assist/release		336	Martin	
Boomerang	F	SWFTm0824B	REC0820	09 11 2008	Assist/release	1808	347	Brevard	

2008 RESCUES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>RESCUE DATE</i>	<i>RESCUE TYPE</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RESCUE COUNTY</i>	<i>TRANSPORTED TO</i>
	F	RNE0813	SWFTm0825B	10 03 2008	Brought into captivity	876	272	Clay	SeaWorld
	F	SWFTm0826B	REC0821	10 03 2008	Brought into captivity	627	261	Volusia	SeaWorld
Dennis	M	SWFTm0827B		10 11 2008	Brought into captivity	820	285	Other	SeaWorld
Bonehead	M	RSW0809	102639	10 14 2008	Brought into captivity	1052	318	Lee	Lowry Park Zoo
	N/D	REC0822		10 16 2008	Assist/release		250	Brevard	
Homeslice	M	RNW0816	102641	10 17 2008	Brought into captivity	725	255	Citrus	Lowry Park Zoo
Locket	F	102643	RNW0817	10 28 2008	Brought into captivity	917	319	Citrus	Lowry Park Zoo
	F	RNW0818		11 03 2008	Assist/release		282	Pinellas	
	M	CR0823	MNW0854	11 22 2008	Unsuccessful Rescue	553	242	Citrus	

2008 RESCUES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>RESCUE DATE</i>	<i>RESCUE TYPE</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RESCUE COUNTY</i>	<i>TRANSPORTED TO</i>
	F	102654	CR0822	11 26 2008	Brought into captivity	620	262	Citrus	Lowry Park Zoo
Uncle	M	RNW0819	102655	12 01 2008	Brought into captivity	865	273	Citrus	Lowry Park Zoo
	F	RSE0813		12 01 2008	Assist/release		238	St. Lucie	
Blitzen	M	RSE0814	MSTm0805	12 08 2008	Brought into captivity	983	318	Monroe	Miami Seaquarium
	M	102662	CR0826	12 09 2008	Brought into captivity	551	237	Citrus	Lowry Park Zoo
	M	RSW0810	MSW0881	12 10 2008	Brought into captivity	99	128	Collier	
	M	RNW0820	CCR0827a	12 12 2008	Assist/release	0	260	Citrus	
	M	RNW0821	CCR0827b	12 12 2008	Assist/release	0	253	Citrus	
	F	RNW0822	CCR0827c	12 12 2008	Assist/release	0	175	Citrus	

2008 RESCUES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>RESCUE DATE</i>	<i>RESCUE TYPE</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RESCUE COUNTY</i>	<i>TRANSPORTED TO</i>
Mossback	F	SWFTm0828B	REC0823	12 18 2008	Brought into captivity	1300	295	Volusia	SeaWorld
Kringle	M	SWFTm0830B	REC0825	12 27 2008	Brought into captivity	397	195	Brevard	SeaWorld
	F	RSE0816	MSE0838	12 29 2008	Brought into captivity	163	158	Monroe	SeaWorld
Midnight	F	RSW0811	MSTm0806	12 29 2008	Brought into captivity	876	306	Monroe	Miami Seaquarium
Eva	F	SWFTm0829B	REC0824	12 18 2008	Brought into captivity	280	173	Volusia	SeaWorld
	F	RSE0815	MSE0834	12 22 2008	Brought into captivity	392	196	Palm Beach	

2008 RELEASES

NAME	SEX	MANATEE ID #1	RELEASE DATE	RESCUE DATE	RELEASE WEIGHT	RELEASE LENGTH	RESCUE WEIGHT	RESCUE LENGTH	RELEASE COUNTY	RESCUE COUNTY	TAG
Peace Pec	M	RSW0714	05 08 2008	07 18 2007	835	263	620	261	Charlotte	Charlotte	
Repeat	F	RNW0809	08 12 2008	06 27 2008	155	158	155	155	Citrus	Citrus	
Snitch	F	RNW0706	07 18 2008	10 26 2007	620	238	470	219	Pinellas	Pinellas	
Sassy	F	RNW0811	11 04 2008	08 08 2008	795	255	645	241	Citrus	Citrus	
Gymnastics Chicken	F	RSW0803	06 13 2008	04 24 2008	1510	330	1625	343	Collier	Collier	
Choko	M	RSW0710	05 14 2008	05 24 2007	920	265	555	248	Collier	Monroe	
Pete	F	RNW0808	08 12 2008	06 27 2008	1030	280	1030	280	Citrus	Citrus	
Little Coral	F	RSW0706	06 05 2008	03 26 2007	860	249	355	184	Lee	Lee	
Muddy Barron	M	RSW0512	02 27 2008	12 22 2005	705	238	100	144	Citrus	Collier	GPS
Hurricane	M	MSQ-11	02 11 2008	11 20 1983	1584	323	70	104	Volusia	Captive Born	GPS
Frannie	F	RNW0806	08 13 2008	06 05 2008	640	240	525	223	Hillsborough	Pinellas	
Forgle	M	RSW0802	08 14 2008	04 13 2008	605	241	510	232	Sarasota	Sarasota	
Chicken Little	M	RSW0804	06 13 2008	04 24 2008	119	124	69	115	Collier	Collier	
Sharpie	M	MSTm0802	04 17 2008	02 25 2008	535	231	525	224	Monroe	Monroe	

2008 RELEASES

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>RELEASE DATE</i>	<i>RESCUE DATE</i>	<i>RELEASE WEIGHT</i>	<i>RELEASE LENGTH</i>	<i>RESCUE WEIGHT</i>	<i>RESCUE LENGTH</i>	<i>RELEASE COUNTY</i>	<i>RESCUE COUNTY</i>	<i>TAG</i>
	F	SWFTm0813B	05 23 2008	05 16 2008	940	271	940	271	Volusia	Volusia	
	M	SWFTm0814B	05 23 2008	05 16 2008	59	111	59	111	Volusia	Volusia	
Annie	F	SWFTm0518B	02 11 2008	08 12 2005	1055	262	70	129	Volusia	Volusia	GPS
Penny	F	SWFTm0816B	11 25 2008	07 03 2008	720	250	677	257	Brevard	Brevard	
Dundee	M	SWFTm0713B	01 08 2008	11 26 2007	1095	307	1085	307	Volusia	Volusia	GPS
Rocket	M	SWFTm0606B	02 11 2008	03 08 2006	745	247	170	148	Volusia	Volusia	GPS

TRANSFERS 2008

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>PRESENT LOCATION</i>	<i>PROPOSED LOCATION</i>	<i>TRANSFER REASON</i>	<i>TRANSFER DATE</i>
Snitch	F	RNW0706	South Florida Museum	Lowry Park Zoo	Staging area for pending release	12 20 2008
Baby Sister	F	CR0807	Lowry Park Zoo	South Florida Museum	Make room at critical care facility	07 18 2008

2008 DEATHS

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>DATE DIED</i>	<i>DEATH OCCURRED</i>	<i>DEATH CAUSE HUMAN</i>	<i>NATURAL</i>	<i>OTHER</i>	<i>NOT DETERMINED</i>
	M	CR0823	MNW0854	11 23 2008	Following unsuccessful rescue		Natural	Other	No
Blitzen	M	RSE0814	MSTm0805	12 27 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No
	M	RSW0317	MSW0813	01 29 2008	Following release	Entangle			No
Frenchie	M	MSTm0801	RSE0803	01 31 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No
Dundee	M	SWFTm8601CB	100379	07 07 2008	Following release	Entangle			No
	M	REC0811	MEC0831	05 05 2008	During transport		Natural	Calf w/ buoyancy issu	No
	M	RSW0808	MSW0862	08 23 2008	During transport	Watercraf			No
	F	RSE0806	MSE0814	03 27 2008	During transport		Natural	Cold Stress	No
Pete	F	RNW0808	102593	12 12 2008	Following release				Yes

2008 DEATHS

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>DATE DIED</i>	<i>DEATH OCCURRED</i>	<i>DEATH CAUSE HUMAN</i>	<i>NATURAL</i>	<i>OTHER</i>	<i>NOT DETERMINED</i>
	F	RSE0815	MSE0834	12 22 2008	During rescue		Natural	Cold stress	No
Boomerang	F	REC0820	SWFTm0824B	09 10 2008	Following release		Natural	Conjected GI, bladde	No
	M	RSW0810	MSW0881	12 10 2008	During transport		Natural	Orphan	No
MD	F	100451	TTB029	09 08 2008	Following release	Entrapme			No
	M	RSE0811	MSE0817	05 28 2008	Following Unsuccessful rescue	Watercraf			No
	F	RSE0816	MSE0838	12 29 2008	During transport	Watercraf			No
	M	REC0816	MEC0853	06 30 2008	During transport		Natural	Orphan	No
Locket	F	RNW0817	102643	10 31 2008	During rehabilitation (upon arrival at facility and thereafter)		Natural	Emaciated	No
	M	RSW0807	102597	07 14 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No

2008 DEATHS

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>DATE DIED</i>	<i>DEATH OCCURRED</i>	<i>DEATH CAUSE HUMAN</i>	<i>NATURAL</i>	<i>OTHER</i>	<i>NOT DETERMINED</i>
	M	102662	CR0826	12 11 2008	During rehabilitation (upon arrival at facility and thereafter)		Natural	large ventral lump	No
	F	102654	CR0822	12 05 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No
Bonehead	M	RSW0809	102639	11 04 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No
Prosperity	F	MSTm0803	RSE0809	05 10 2008	During rehabilitation (upon arrival at facility and thereafter)		Natural	Cold stress	No
Dennis	M	SWFTm0827B		10 12 2008	During transport		Natural	Cold stress	No
	F	SWFTm0817B	RNE0811	07 30 2008	During rehabilitation (upon arrival at facility and thereafter)		Natural	Orphan	No
	F	SWFTm0826B	REC0821	10 06 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No

2008 DEATHS

<i>NAME</i>	<i>SEX</i>	<i>MANATEE ID #1</i>	<i>MANATEE ID #2</i>	<i>DATE DIED</i>	<i>DEATH OCCURRED</i>	<i>DEATH CAUSE HUMAN</i>	<i>NATURAL</i>	<i>OTHER</i>	<i>NOT DETERMINED</i>
	M	SWFTm0820B	RNE0812	09 11 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No
Diamond	M	SWFTm0808B	REC0805	02 20 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No
	F	SWFTm0807B	REC0804	02 21 2008	During rehabilitation (upon arrival at facility and thereafter)	Watercraf			No
	F	SWFTm0806B	REC0802	02 05 2008	During transport		Natural	Cold Stress	No
	M	SWFTm0802B	RNE0802	01 07 2008	During rehabilitation (upon arrival at facility and thereafter)		Natural	Cold Stress	No
Hurley	M	SWFTm0812B	REC0810	09 29 2008	During rehabilitation (upon arrival at facility and thereafter)		Natural	Orphan	No
Desmond	M	SWFTm0811B	REC0809	08 03 2008	During rehabilitation (upon arrival at facility and thereafter)		Natural	Orphan	No

2008 Facility Inventory

<i>FACILITY</i>	<i>MANATEE ID 1</i>	<i>MANATEE ID 2</i>	<i>NAME</i>	<i>SEX</i>	<i>BIRTH STATUS</i>	<i>ORIGIN</i>	<i>ACCESSION DATE</i>	<i>TIME IN CAPTIVITY</i>	<i>MEDICAL STATUS</i>
CIN	SWFTm8911	105042	Lil Joe	M	WB-ADULT	Volusia	7/30/1989	19y5m	Stable
CIN	SWFTm9122	105043	Slip	M	CB-DR	Captive Born	11/22/1991	17y1m	Stable
COL	SWFTm9535	205097	Stubby	F	WB-SUBADULT	St. Lucie	12/27/1995	13y	Stable
COL	SWFTm9539	HS9615	Holly	F	WB-SUBADULT	Duval	11/15/1995	13y1m	Stable
CSN	NEPST910		El Tuque	M	ORPH-HR	Ponce, PR	9/9/2005	3y3m	Stable
HS	HS8602		Ariel	F	WB-SUBADULT	Dade	12/25/1973	35y	Stable
HS	HS8601		Amanda	F	WB-ADULT	Dade	12/25/1973	35y	Stable
HS	MLF252	HS252	Rosie	F	WB-SUBADULT	Duval	9/12/1968	40y3m	Stable
HS	SQM-1	HS8695	Lorelei	F	CB-DR	Captive Born (Dade)	4/7/1994	14y8m	Stable
HS	SWF9831	HS0005	Electra	F	WB-SUBADULT	Brevard	12/13/1998	10y	Stable
HS	HS9002		Betsy	F	CB-DR	Captive Born (Citrus)	10/19/1990	18y2m	Stable
LPZ	RNW0819	102655	Uncle	M	WB-ADULT	Citrus	12/1/2008	1m	Guarded
LPZ	RSW0716	102406	CC Baby	F	CB-HR	Lee	9/16/2007	1y3m	Stable
LPZ	RNW0801	102470	Curlew Creek	M	WB-SUBADULT	Pinellas	1/11/2008	1y	Stable
LPZ	RSW0715	102382	Myra	F	ORPH-HR	Lee	7/17/2007	1y5m	Stable
LPZ	RNW0803	102482	UPC	M	WB-ADULT	Wakulla	2/12/2008	10m	Critical
LPZ	RSW0706	102333	Baby Coral	F	ORPH-FR	Lee	2/26/2007	1y10m	Stable
LPZ	RNW0816	102641	Homeslice	M	WB-SUBADULT	Citrus	10/17/2008	2m	Stable

2008 Facility Inventory

<i>FACILITY</i>	<i>MANATEE ID 1</i>	<i>MANATEE ID 2</i>	<i>NAME</i>	<i>SEX</i>	<i>BIRTH STATUS</i>	<i>ORIGIN</i>	<i>ACCESSION DATE</i>	<i>TIME IN CAPTIVITY</i>	<i>MEDICAL STATUS</i>
LPZ	CR06-18	102289	Big Brother	M	WB-ADULT	Citrus	12/26/2006	2y	Critical
LVS	SWFTm0116	M00011	Bock	M	WB-SUBADULT	Duval	07/01/2001	7y7m	Stable
LVS	SWFTm0015	M00015	Lou	M	WB-ADULT	Martin	12/16/2000	8y1m	Guarded
MML	100414	T00075	Hugh	M	CB-DR	Dade	6/28/1984	24y6m	Stable
MML	100341		Buffett	M	CB-DR	Dade	5/16/1987	21y7m	Stable
MSQ	MSTm0804		Kiandra	F	ORPH-HR	Monroe	06/15/2008	7m	Stable
MSQ	MSTm5701		Romeo	M	WB-ADULT	Dade	1957	51y	Stable
MSQ	MSTm9701		Phyllis	F	WB-ADULT	Dade	3/13/1997	11y10m	Guarded
MSQ	MSTm5801		Juliette	F	WB-ADULT	Dade	1958	50y	Stable
MSQ	MSTm9304		Phoenix	F	WB-ADULT	Broward	03/07/1993	15y10m	Stable
MSQ	MSTm0701		Tequesta	M	ORPH-HR	Palm Beach	2/27/2007	2y	Stable
MSQ	MSTm0606		Senora	F	WB-ADULT	Broward	11/11/2006	2y2m	Guarded
MZ	DRN0008		Guaili	M	ORPH-HR	Guayama, PR	8/7/2008	4m	Stable
SFM	CR0807	102484	Baby Sister	F	WB-SUBADULT	Citrus	2/13/2008	10M	Stable
SFM	102524		Little Nap	M	ORPH-HR	Collier	4/7/2008	9m	Stable
SFM	SB2		Snooty	M	ORPH-HR	Dade	07/21/1948	60y5m	Stable
SFM	RSW0722	102427	Coral Lee	F	ORPH-HR	Lee	10/19/2007	1y2m	Stable
SWC	SWFTm9614		Vail	M	WB-SUBADULT	Brevard	08/11/1996	12y5m	Stable

2008 Facility Inventory

<i>FACILITY</i>	<i>MANATEE ID 1</i>	<i>MANATEE ID 2</i>	<i>NAME</i>	<i>SEX</i>	<i>BIRTH STATUS</i>	<i>ORIGIN</i>	<i>ACCESSION DATE</i>	<i>TIME IN CAPTIVITY</i>	<i>MEDICAL STATUS</i>
SWC	SWFTm9121		Webster	M	CB-HR	Captive Born	10/17/1991	18y3m	Stable
SWC	SWFTm0002		Eddie	M	WB-SUBADULT	Marion	01/26/2000	9y	Stable
SWF	SWFTm0805	REC0801	Kennedy	M	WB-SUBADULT	Brevard	1/26/2008	1y	Stable
SWF	SWFTm0710	RNE0705	Jackie	F	ORPH-HR	Duval	8/16/2007	1y4m	Stable
SWF	SWFTm0710	RNE0705	Jackie	F	ORPH-HR	Duval	8/16/2007	1y4m	Stable
SWF	SWFTm0619		C.C.	M	ORPH-HR	Lee	7/1/2006	2y6m	Stable
SWF	SWFTm0801	RNE0801	Ana Lucia	F	WB-SUBADULT	Duval	1/3/2008	1y	Stable
SWF	SWFTm0830	REC0825	Kringle	M	WB-SUBADULT	Brevard	12/27/2008	<1m	Guarded
SWF	SWFTm0804	RNE0804	Sawyer	M	WB-SUBADULT	Duval	1/18/2008	1y	Stable
SWF	SWFTm8687		Sara	F	ORPH-HR	Sarasota	10/14/1986	22y2m	Stable
SWF	SWFTm8528		Charlotte	F	ORPH-HR	Charlotte	6/17/1985	23y6m	Stable
SWF	SWFTm9537		Oakley	F	WB-SUBADULT	Volusia	12/1/1995	13y1m	Stable
SWF	SWFTm8233		Rita	F	WB-ADULT	Brevard	4/12/1982	26y8m	Stable
SWF	SWFTm0309		Primo	F	WB-ADULT	Brevard	4/14/2003	5y8m	Stable
SWF	SWFTm0110		Amber	F	ORPH-HR	Volusia	3/14/2001	7y9m	Stable
SWF	SWFTm0828	REC0823	Mossback	F	WB-ADULT	Volusia	12/18/2008	1m	Guarded
SWF	SWFTm0829	REC0824	Eva	F	WB-SUBADULT	Volusia	12/18/2008	1m	Stable
SWF	SWFTm0803	RNE0803	Libby	F	WB-SUBADULT	Duval	1/18/2008	1y	Stable

Manatee Rescue, Rehabilitation and Release Program Report 2008

Rescues: 96

Types of Rescue:

- Assist & Release: 37
- Brought into Captivity = 54
- Incidental Rescue = 3
- Unsuccessful Rescue = 2

Causes of Rescue:

- Natural = 37
 - Cold Stress = 11
 - Orphans = 11
 - Tidally Stranded = 8
 - Other Causes (emaciation, buoyancy issues, lethargy, etc) = 7
- Entanglement = 23
 - Pot + Float Lines = 5
 - Crab Traps = 4
 - Monofilament = 4
 - Float Lines Only = 3
 - Ropes = 2
 - Float + Line = 1
 - Other Sources = 4 (turtle nets, telemetry gear)
- Watercraft = 19
 - Blunt = 9
 - Propeller = 8
 - Both = 1
 - Undetermined = 1
- Entrapment = 10
 - Other causes = 7 (ditch canals, intake canals, mosquito impoundments, floating docks, concrete spillways)
 - Pipes = 2
 - Isolated = 1
- Calf w/ Injured Mom: 3
- Relocations = 2
- Mother w/ Injured Calf = 2

Animal Information:

- Males = 43, Females = 35, N/D = 18

Outcomes:

- Released = 11*
 - Still in Captivity = 14
 - Died = 30*
- *one animal rescued this year also died after it was released

Releases: 20

Animal Information:

- Males = 10, Females = 10
- Releases from animals rescued in previous years = 9
- Releases from animals rescued this year = 11

Tagged Animals: 5

- 4 released at Blue Springs (Hurricane, Dundee both captive born, Annie, Rocket)
- 1 released at Crystal River (Muddy Barron)

Transfers: 2

Reasons for Transfer:

- Staging for pending release
- Make room at critical care facility

Deaths: 33

Causes of Death

- Natural = 17
 - Cold Stress = 6
 - Other = 6
 - Orphan = 5
- Watercraft = 12
- Entanglement = 2 (ingestion of mono & rope)
- Entrapment = 1 (culvert)
- Not determined = 1

Deaths Occurred:

- During rehab = 17
- During transport = 8
- Following release = 5
- Following unsuccessful rescue = 2
- During rescue = 1

Animal Information:

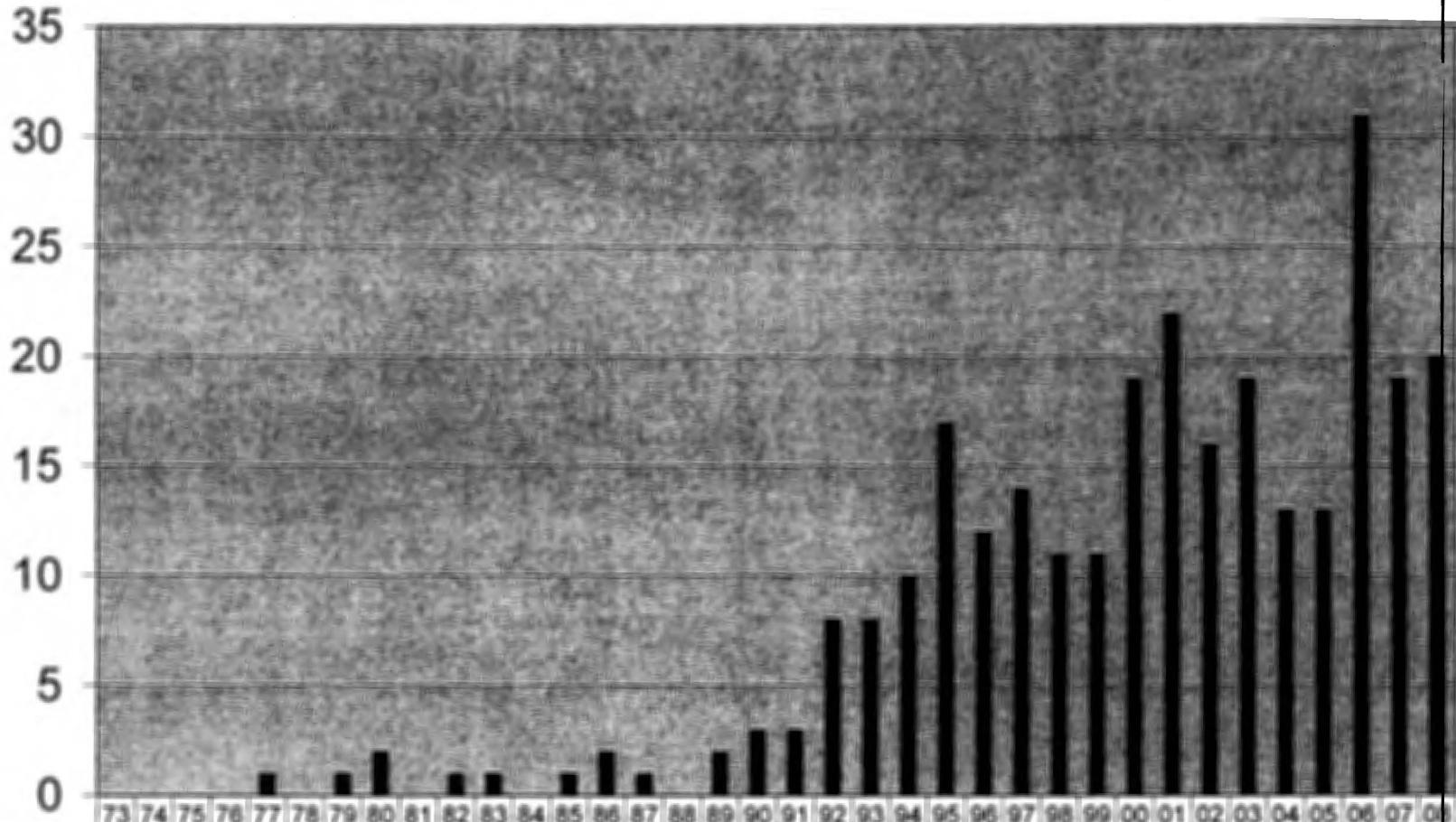
- Males = 19, Females = 14
- Deaths from animals rescued this year = 30
- Deaths from animals already released = 3

Facility Inventory: 54

Animal Information:

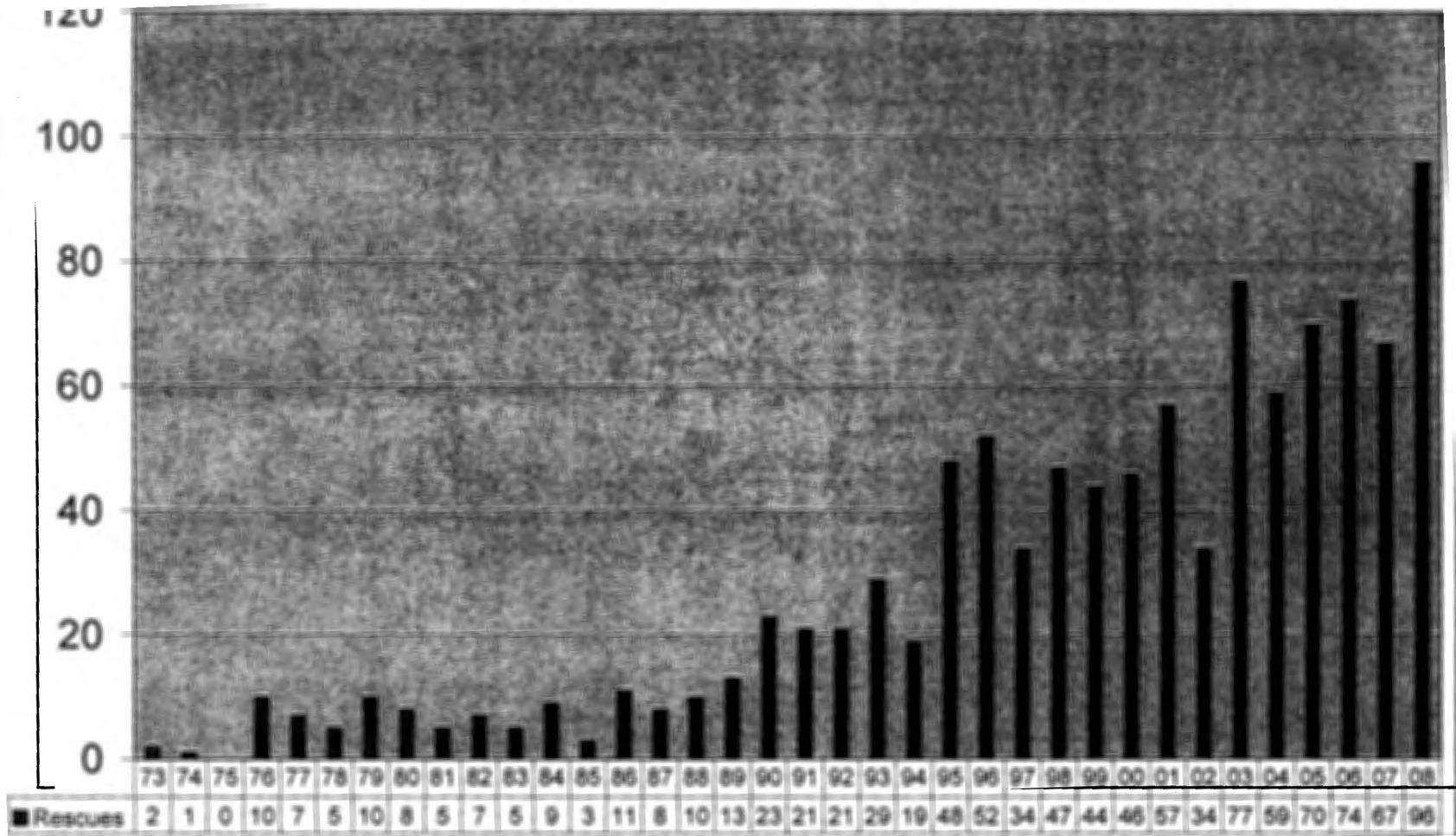
- Males = 24, Females = 30
- Adults = 32, Juveniles = 9, Calves = 13

Releases



■ Releases	0	0	0	0	1	0	1	2	0	1	1	0	1	2	1	0	2	3	3	8	8	10	17	12	14	11	11	19	22	16	19	13	13	31	19	20
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Rescues



December 15, 2008

Memorandum for the Record

From: Nicole Adimey, USFWS, Manatee Rescue, Rehabilitation and Rescue Program Coordinator

Subject: U.S. Fish and Wildlife Service position regarding captive manatees with papilloma virus

Introduction

The purpose of this memo is to present the history of papilloma virus (PV) within the captive and wild manatee population, present results of research conducted to better understand PV, outline recommendations made by an expert disease panel, and document the actions and decisions made by the Service regarding PV and captive manatees.

History

The North Florida Ecological Services Office in Jacksonville, Florida has recovery lead and administers the daily management of the Florida manatee. One recovery activity for this species is the implementation of the Manatee Rescue, Rehabilitation and Release Program (Rehab Program). This program began in the early 1970s with the goal of assisting injured and distress manatees in the continental United States and the Caribbean. To date the Rehab Program has successfully rescued, medically treated, and released hundreds of injured and distressed manatees.

In 1996 a small 4mm raised lesion was removed from the facial disc of a manatee in rehabilitation at Sea World Orlando. This read out as a possible papilloma lesion and it was assumed that this was a normal expected issue in the species so no action was taken. This animal had been in rehab for years and came in contact with a number of sick and injured animals during it rehab process. A number of animals taken to Homassassa originated from SeaWorld Orlando and had been exposed to this animal or to the animal who had exposed the animal first biopsied.

On July 23, 1997 researchers announced the discovery of a papilloma virus (PV) in Florida manatees undergoing rehabilitation at the Homosassa Springs Wildlife State Park (HSWSP). PV are transmissible viruses that are generally species-specific and form usually benign tumors in numerous mammalian and bird species (Sundberg *et al.* 1995; Sundberg *et al.* 2000). After the discovery of this virus a quarantine was implemented in 1998 at the facility prohibiting any direct contact between captive manatees housed in the facility and with wild manatees just outside the enclosure fence.

HSWSP, in collaboration with Dr. Greg Bossart and colleagues, began to monitor the infected animals noting lesion numbers, size, location and overall health. In 1999 several biopsies were taken from wild captive manatees and tested for PV. These samples did not indicate the presence of PV, however, these data were based on bovine PV screens, which at the time, was the most advanced technology to test for the virus.

In 2003 a papillomavirus of manatees was identified using a screening assay adapted for use in manatees. The researchers successfully sequenced the entire manatee papilloma virus genome, and designated this virus as a novel virus species TmPV-1 (Rector *et al.* 2004) and the first virus recognized in members of the Order Sirenia. This research suggested that TmPV-1 was not transmitted to manatees, but rather co-evolved with the species and was present in a latent form in manatee skin. In 2004, the production of virus-like particles was also completed allowing for the development of a sensitive and specific ELISA blood test (these virus-like particles were also potential vaccine antigen candidates.) The ELISA test was designed as a tool to determine exposure to TmPV-1 in manatees; a seroprevalence study was then initiated by Dr. Greg Bossart and colleagues from the James Graham Brown Cancer Center in Louisville, Kentucky. Subsequently, in 2005 archived samples were tested for serum sensitivity to antibody titers for TmPV-1 using the ELISA. Both wild and captive manatees (n = 21 and 20 respectively) from Florida were screened, as well as 23 samples from manatees collected in Mexico. Results demonstrated positive titers for four captive manatees known to have had TmPV-1; however, free-ranging animals showed no titer for TmPV-1.

In parallel, in the winter of 1998, biologists from the US Geological Survey Sirenia Project (USGS) began collecting manatee skin samples from Homosassa and Crystal Rivers as part of a preliminary study to investigate for the presence of PV in wild manatees. Samples were opportunistically collected through 2003, then subject to DNA extraction and analyzed using polymerase chain reaction (PCR) amplification. Results from this study (Woodroof *et al.* 2003, Woodruff *et al.* 2005) supported the presence of PV in six wild manatee samples collected in the winter of 2003. Subsequently, concerns were raised regarding the integrity of the laboratory and possible contamination of the samples collected. An internal review determined the research and its findings were valid, however, concerns and doubts were still expressed within the manatee research and management community, prohibiting the necessary confidence to support a change in management practices or lifting the existing quarantine.

In the fall of 2003 the Service discovered manatees at Sea World San Diego possessed lesions associated with PV. Following this discovery, the Service was also informed about a previously PV infected manatee at Sea World Orlando (SWF). This animal had been housed with many other captive manatees that subsequently were released or transferred to other holding facilities. This new information resulted in an immediate quarantine for both Sea World facilities.

A series of meetings were organized in the spring of 2004 with manatee veterinarians, biologists, caregivers and managers to address the issue of PV in the captive manatee population. An outside panel of disease experts was also convened (Attachment #1) to advise the Service on the best approach for research and management actions to address manatee PV. Unanimous recommendations included: (1) the development of an ELISA screen for both the captive and wild populations; (2) the initiation of an epidemiology study to determine prevalence of PV in the wild; (3) the standardization and continued surveillance for PV in the wild population; (4) the creation of a management plan based on scientific findings of the ELISA test and (5) the prohibition on releasing infected manatees with "active" lesions caused by PV. The Service was also advised to limit the release of "exposed" animals to only the Homosassa River area; however, the Service took a conservative approach and decided not to release "exposed" manatees until it was scientifically proven that PV did exist in free-ranging manatees.

In the winter of 2005-06 USGS biologists, in coordination with the Service, initiated an epidemiology study in the Crystal River/Homosassa Springs region to determine the prevalence of PV in the wild manatee population and investigate the health of animals with suspicious lesions through the change of seasons. To date, the study has been conducted for three field seasons with a total of 37 manatees (24-males, 13-females) captured and examined. Although skin lesions have occasionally been observed, no papillomavirus infections been confirmed using any of the validated, gold-standard tests (*i.e.*, immunohistochemistry, PCR, and general histology).

Since the discovery of PV, Dr. Bossart, Dr. Jensen and colleagues continued to investigate TmPV-1. A cyclical nature of the lesions on the captive manatee population was eventually observed (similar to that observed by field biologists from suspect lesions on wild manatees), suggesting the probability of immune compromise and activation of a latent virus infection, as seen in other species infected with PV (Jensen 2008 pers. comm.). This collaboration continued with vaccine trials in 2006 on horses to ascertain the efficacy of virus-like particles as a vaccine antigen. Results from the trials indicated a positive immune response and no adverse reactions. Due to permitting and financial constraints, this collaborative work that was intended to test the vaccine antigen and adjuvants in a vaccine format and validate the ELISA on captive manatees known to possess TmPV-1 was not completed. Later discussions with clinical veterinarians, researchers and managers concluded a limited applicability of the vaccine, as it was not feasible both financially and logistically to consider vaccinating large numbers of wild manatees.

In the spring of 2008, a recommendation was made to the Service to use existing ELISA methodology to determine the existence of PV in free-ranging manatees. This recommendation resulted in a joint effort among partners within the Rehab

Program and the James Graham Brown Cancer Center. Fresh samples were collected from all captive manatees (held in captivity for > 1 month). Additionally, archived samples were obtained from wild manatees in all four designated management units in Florida (*i.e.*, St. Johns River area, Atlantic coast, Northwest region and Southwest region) and from wild manatees in Belize. Drs. Jensen, Ghim, Dona and colleagues used the same ELISA that was previously conducted on captive manatees. Results from the study at the most conservative levels revealed free-ranging manatees have been exposed to PV (Dona *et al.* in review). Additionally, this work supported the established theories that PV co-evolved with the species and that manatees can host latent PV infections which, under certain conditions where a co-factor is present, can become active and eventually non-lethal lesions are presented.

The research from Dona and colleagues resulted in letters to the Service supporting the release of previously infected or "exposed" manatees, pending certain conditions are met; these letters are presented in Attachment 2 of this memo.

Service Position

Given the scientific evidence presented and recommendations from the expert panel, the Service now supports the release of captive manatees that are free of PV lesions, and have been free from lesions or any contact with animals possessing lesions for at least six months.

Our position is based on the following factors: (1) The species-specific nature of PV's which eliminates concerns that PV could infect other species in the wild; (2) Research by Drs. Jensen and Bossart which supports the theory that TmPV-1 is a subclinical infection that manatees have possessed for millions of years and has co-evolved with species; (3) The recent findings by Dona *et al.* that prove manatees in the wild are exposed to PV; (4) No manatee has been rescued with a known active PV lesion (n > 900, USFWS unpublished data); and (5) The benign nature of many PV lesions, supported by the fact that no manatee has been known to die as a result of PV (n = 6, 868, FWC unpublished data from April 1974 through September 2008).

Current evidence suggests that PV does not pose a threat to the manatee population; however, the Service will continue to support research to enhance our understanding of this virus. It is believed that wild, healthy manatees have the ability to resolve PV on their own. Monitoring of both the captive and wild populations will continue to ensure that any changes within the wild manatee population are promptly addressed and evaluated.

Nicole M. Adimey