

**Anecdotal Accounts of Manatee Behavior: Conservation
and Management, Behavioral Ecology, and Cognition**

Supplemental Table

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Behavioral Anecdotes for Manatees

Anecdotes that are numbered in the text are referenced in this table. Some anecdotes in the table do not appear in the text. Most anecdotes pertain to Florida manatees (*Trichechus manatus latirostris*). Anecdotes pertaining to Antillean manatees are identified by (*Tmm*) – *Trichechus manatus manatus* and those related to African manatees are identified by (*Ts*) – *Trichechus senegalensis*. We received no reports on Amazonian manatees (*Trichechus inunguis*). For the most part, anecdotes are listed under only one category to avoid repetition, but they may be applicable to other categories.

Behavior category	ID no.	Behavior description	Contributor(s)
<i>Conservation and management</i>			
<i>Interactions with boats (motorized)</i>	1	<i>Biscayne Bay</i> : Manatees feed at night where there are a lot of boats.	Cora Berchem, Pat Rose
	2	(<i>Tmm</i>) <i>Jennifer</i> : In Belize (and in Cuba), manatees “hide” when pursued for capture for health assessments. The manatees would use overhanging mangrove vegetation along the water’s edge as cover from humans. This seems to be evasion. Some manatees appear to be familiar with the nets so can more easily avoid them, and may even lift the edge of the net and sneak out. In Cuba, hunting still occurs in places, so wariness may in part be due to prior experience with humans.	Wayne Hartley, Jennifer McGee
	3	<i>Blue Spring, Florida</i> : Some manatees have a tendency to “explore” the FWC rescue boat when it enters the spring run instead of swimming away from it, especially when the boat stands still (prior to rescue).	Cora Berchem
	4	<i>Hobe Sound area, north of Riviera</i> : As winter comes, manatees swim south in the Intracoastal Waterway. In deep water, a lot of boats go slowly, 8 to 15 mph. They time dives and rise after boat passes. Mostly single individuals.	Cora Berchem, Pat Rose
	5	<i>Jim</i> : With early VHF tracking in the Fort Myers, Florida, area (~1986), Matt Clemons would hear the manatee tag transmitting on the way toward the area it was in, but as he got closer, the manatee would move away as if it had detected the boat and associated it with Matt. Jim suspects they can identify specific motors. Susan agreed that they recognized the boat they used.	Susan Butler, Jim Reid
	6	(<i>Ts</i>) They are very sensitive to noise and will quickly avoid navigating boats; hence, boat collision with manatees in Cameroon is very uncommon.	Jean-Pascal Koh Dimbot
	7	In the St. Johns River, manatees often stay close to the bank when boats are around. Without apparent visual contact, when kayaks are approaching, they will move out of the immediate area, as if doing a circular dance coordinated with the movements of the kayak, but still stay in the general vicinity.	Wayne Hartley, Jennifer McGee
	8	(<i>Ts</i>) <i>Lake Mandza, Gabon</i> : Manatees flee when they hear a motorized boat approaching.	Christy Achtone Nkollo Aganga
	9	(<i>Ts</i>) <i>Lake Ossa, Cameroon</i> : A manatee followed our boat for about a minute and flew away when the boat’s engine noise increased. The manatee was probably a calf or a subadult.	Clinton Factheu
	10	(<i>Ts</i>) <i>Lake Ossa, Cameroon</i> : During boat surveys (min. 20 times), manatees generally flee when the boat is moving at high speed.	Clinton Factheu
	11	One manatee they were approaching in a boat did a beaver tail slap on the water and porpoised and left.	Susan Butler, Jim Reid
<i>Interactions with boats (nonmotorized)</i>	12	(<i>Ts</i>) <i>Ndogo Lagoon, Gabon</i> : They flee when they sense the presence of a nonmotorized boat.	Christy Achtone Nkollo Aganga
	13	(<i>Ts</i>) <i>Gabon, Cote D’Ivoire, Angola</i> : Although African manatees are extremely shy and wary of humans (with good reason!), in several places where hunting has stopped or is minimal, they exhibit curiosity about boats and will approach and sometimes hang around a boat.	Lucy Keith-Diagne
	14	<i>Blue Spring, Florida</i> : While filming manatees in Blue Spring, Wayne wanted to get his kayak around to the other side of the manatees, but they kept moving to keep him on the same side.	Wayne Hartley, Jennifer McGee
	15	<i>Blue Spring, Florida</i> : Manatees not familiar with Blue Spring (often emigrants from the Atlantic coast) tend to at first be wary of the research canoe.	Cathy Beck, Bob Bonde
	16	<i>Hunter Spring, Crystal River, Florida</i> : A female with a very young calf, under a month old, was being harassed by an aggressive male manatee. He had already forced her to beach in shallow water to protect the calf. He then drove them into a small side canal. I tried to get my kayak between him and Mom. He persisted. At this point, he had her pinned under a dock. I received permission to gently use my paddle to persuade him to move away. When I did, he hit the side of my boat with his fluke. . . . I was amazed that I was still upright. I backed off, knowing that I was way out of my class. By then, some other boaters in the area came to our assistance and were able to separate him from Mom, allowing her to exit from under the dock.	Don Dematteis
	17	<i>Blue Spring, Florida</i> : One very cold winter morning, Wayne and I were in the canoe fully dressed when a sleeping male rose to breathe beneath us, unaware of our presence. He felt the canoe against his back and dove, instantly flipping us out into the water. We were both completely drenched, and the FWS camera I had for surface ID photos was ruined. This was early to mid-1980s. The crowd of tourists on the observation deck were well-entertained.	Tom O’Shea

Manatee Anecdotes: Conservation and Management

	18	Wayne mentioned a manatee that would reach up above the gunwale of the canoe to poke him with its flipper, perhaps attempting to flip the canoe.	Wayne Hartley, Jennifer McGee
	19	<i>Crystal River, Florida</i> : There was one manatee who would attack the red kayaks.	Vincent Maida
	20	<i>Kings Spring, Crystal River, Florida</i> : More than 10 years ago, a large playful manatee put his face on the back of my kayak and pushed me 30 to 40 ft [9.1 to 12.2 m] quite fast.	Don Dematteis
	21	(Ts) Played with a boat paddle using their flippers. More attracted to paddles and boats made of redwood (declaration of fishers). Behavior observed in rivers of Moko and Ndian (Cameroon). Happens only occasionally according to fishers.	Jean-Pascal Koh Dimbot
<i>Interactions with people</i>	22	“Georgia” (a Blue Spring manatee) would do things like boost a person up the ladder at the swimming area, grab a pair of jeans off the dock, and swim off, cavorting with humans in the water.	Wayne Hartley, Jennifer McGee
	23	Jeffrey Foote, a <i>National Geographic</i> photographer, had a manatee (“Floyd”) become attached to him, following him everywhere. When Jeff was standing in the water attempting to photograph other manatees, Floyd would come behind him through his legs, lifting him up.	Wayne Hartley, Jennifer McGee
	24	<i>Jennifer</i> : During a dolphin capture in the Indian River Lagoon that involved lots of boat movement and people, a manatee came up and started goosing people; it stayed, wanting to interact.	Wayne Hartley, Jennifer McGee
	25	Jennifer recounted that while filming, one female manatee approached her and grabbed onto her leg for an extended period (~45 min). Wayne said one manatee at Blue Spring (“Howie”) would regularly grab people for brief periods.	Wayne Hartley, Jennifer McGee
	26	Howie (also the one who flipped us out of the canoe; see anecdote 16) was a very curious adult male notorious for clasp every snorkeler he came across and attempting to clasp other manatees as well. He’d often get in the way as I swam trying to get ID photos or body length measurements of other manatees. John Bengtson and crew nicknamed him “Horny Howie” in the ~1979-1980 period. We attributed Howie’s “curiosity” in part to a mating drive. He was often a participant in cavorting groups. Howie’s tolerance and interest in people also seemed to be a “lifelong” trait.	Tom O’Shea
	27	In September 1986, Bob Bonde and I observed a large manatee drinking fresh water from a sewer discharge in the saline Indian River. It allowed us to touch it as it continued to drink. We thought, geez, we’d better try to tag this one even though we were not prepared to tag any manatees on that trip. The manatee ignored us completely while we made several trips wading in and out of the water to get equipment from our truck parked on shore. This individual (“Moon Unit”) had no experience with people in the water, unlike those at places like Crystal River, but nonetheless had somehow become familiar with and accepted people. It allowed retagging (I think all without capture) another 33 times over the course of nearly 8 years and provided 1,724 days of tracking data for the Atlantic coast study by Deutsch et al. (2003). Tolerance of humans seemed to be a long-lasting trait of this manatee.	Tom O’Shea
	28	In Blue Spring, Florida, Monica was trying to free tag a female when another female was swimming under her, lifting her out of the water. Then, six other females lined up facing Monica as if watching her and the interactions. Many males were also in the spring but did not engage.	Monica Ross
	29	Jennifer has been lifted out while swimming.	Wayne Hartley, Jennifer McGee
	30	Nicole reports that manatees will spin around and look at her. They will look away if the person maintains eye contact. Monica confirms eye contact, including a manatee putting its eye against her mask. Some manatees will avoid or leave if you stare at them. Some will look away and then return to looking at the person.	Nicole Bartlett, Monica Ross
	31	Pat reports manatees watched eye movements in Clearwater, Florida. Eyes are tracking a person closely—head is still. Manatees close their eyes tightly underwater to protect them.	Cora Berchem, Pat Rose
	32	They needed to do a tag change on “Two Notch,” who was in Wakulla Springs with 30 to 40 manatees present; most manatees were moving around, surfacing to breathe, etc., in the presence of Jim and Susan, who were being as still and quiet as possible. From the other side of the spring, Two Notch began to approach their vicinity, but when about 40 ft [12.2 m] away, turned his head as if looking at them with first one eye and then the other, and turned around and swam away down the run.	Susan Butler, Jim Reid
	33	Cathy reports that manatees have looked her in the eye.	Cathy Beck, Bob Bonde
34	(Ts) <i>Senegal</i> : In the Senegal River, there are numerous reports (both to myself and other researchers) from local people saying that manatees will approach people at the edge of the river. Most often it’s reported that they will come to “play” with kids swimming in the river or interact with women washing dishes or clothes at the shoreline. I’ve heard this hundreds of times over the years but, unfortunately, have never seen it, but I also am not able to stay in the villages for long periods of time. In one village, the women told me they have a song they sing to call the manatees in. One man also told me manatees will approach herds of cows when they come to the river to drink. In this region, they are not hunted, and people believe manatees were once human so they respect them. Although I’m not sure why the manatees do this, I think they are curious and not afraid because there’s no threat of hunting, plus they may be getting scraps of food from dishes being cleaned. This region is desert/Sahel outside of the river. There are very few aquatic plants, particularly in the dry season, so manatees may take advantage of any potential food.	Lucy Keith- Diagne	

	35	<i>Crystal River, Florida:</i> We anchored by Jurassic Spring where the mom was sleeping. The baby would come play with us for about 5 min, go back and check to make sure the mom was still sleeping, come back and play with us for another 5 min, go back and check to see if the mom was still sleeping, then come back to us. This went on for a while. It was almost as if he was making sure she was still not paying attention to him so he could sneak away and come play without getting in trouble.	Vincent Maida
	36	Cora sees the manatees mostly in winter. She infers that manatees gain friendliness with people in the summer months.	Cora Berchem, Pat Rose
	37	<i>Crystal River, Florida:</i> They definitely recognize each other, specific guides, boats, and underwater topography and canals.	Mike Birns
	38	<i>Blue Spring, Florida:</i> Manatees often turn their ventral side away from a person as they pass by.	Tom O'Shea
<i>Behavior around capture nets</i>	39	<i>Blue Spring, Florida—Manatees evading capture nets or swimming under capture nets:</i> This was observed during release of BS822 “Lesley” after almost 3 years in rehab for a watercraft injury. She would roll herself onto her back to not let the vet or release staff touch her back/area of the healing wound. She traveled in the truck to the release site on her back and was released on her back.	Cathy Beck, Bob Bonde
	40	Some manatees will retreat into the herd to avoid capture. Wayne has seen experienced Blue Spring manatees get out of the nets by going under the lead line. One even went directly through the net, creating its own hole. Jennifer saw this in Belize too (<i>Tmm</i>). In Port Everglades, manatees will often move toward shallow water. Wayne said that he has seen manatees wait until the netting is done so they can get access to the spring.	Wayne Hartley, Jennifer McGee
	41	(<i>Ts</i>) They will tear up nets in order to escape.	Christy Achtone Nkollo Aganga
	42	(<i>Ts</i>) <i>Cameroon:</i> Manatees will move along a fishing net trying to find a way around it to go to the grazing site in Lake Ossa. If the net is long, they will break through it.	Wongibe Poupezo Dieudonne
	43	On its first capture, a manatee got knotted up in the net. On the second capture, it worked the lead line. The third time, it was completely savvy, going over and under the net. Some individuals will dig their nose into the sand and go under the net. They will also lie sideways, and the net will go right over them. They also learn the capture routine—that is, they will follow the boat and then move toward the net opening. <i>Mimicry:</i> One animal got out by the gunwale and an observing manatee followed by the same route.	Nicole Bartlett, Monica Ross
	44	Some manatees are ok on multiple captures and health assessments, even though subjected to semi-invasive procedures like blood draws. They have also seen the opposite—manatees captured once then not frequenting the area for years. “Lucille” started out very friendly but became distant as more direct interactions occurred (e.g., detangling a flipper).	Wayne Hartley, Jennifer McGee
	45	In the early 1980s, manatees at Blue Spring became very “edgy” for days after capture events. A few days after one capture, a different disturbance in the water caused a manatee stampede, with those present swimming rapidly down and out of the spring run and “screaming” into the hydrophone as they passed by (certainly communicating fear and warning to others).	Tom O'Shea
	46	They encountered a female (“Muse”) in Wakulla that was very approachable and interactive—easy to tag. This individual swam away and then came back to the boat and held its tail up as if to say “Take it off of me.”	Susan Butler, Jim Reid
	47	<i>Wayne:</i> John Bengtson was attempting to net a female, and it was waiting just outside the net as if it knew what was going on and wasn't about to get caught. In tracking tagged manatees in Lake Monroe, one (“Jackson”) that was branded but not tagged would regularly appear in the net.	Wayne Hartley, Jennifer McGee
<i>Rehabilitation and release</i>	48	Rehabilitated manatees will watch cavorting or mating herds but not participate themselves. They will follow other animals traveling. Juveniles will stay with a mother–calf pair for 7 to 10 days, but they will not try to nurse.	Nicole Bartlett, Monica Ross
	49	Calves that have been rehabbed and released (many with no wild experience) follow other manatees around until they get the hang of the navigation routes.	Buddy Powell
	50	A cold-stressed female was rescued and tagged upon release at Blue Spring. She had a calf the summer after her release. When she returned to Blue Spring the following year, she tried to park her calf four times, but it kept following her; the fifth time, she parked it and left, and then turned around and stared at the calf. It remained behind as if obeying.	Monica Ross
	51	On first release, “Stormy” never left Blue Spring. He was recaptured and upon second release he did OK. He joined up with Georgia and her calf. When the mother–calf swam from clear water to dark water, Stormy stopped and would not follow. He approached a second time and balked again. He “burst” through on the third try and caught up to Georgia and her calf. There was only a small difference in temperature between the clear and dark water, 0.5°C. Stormy was the only long-term captive to adapt. Stormy was born in captivity and lived in captivity for ~20 years.	Nicole Bartlett, Monica Ross

Manatee Anecdotes: Conservation and Management

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| 52 | <i>(Tmm)</i> In Puerto Rico, “Moises” was raised in captivity as a calf and then tagged and released into a sea pen. During his time in captivity in rehabilitation, he was given a yellow and blue boogie board to play with and for enrichment purposes. He imprinted well with the board, particularly to satisfy his male youngster needs (masturbation). After release, he would hold onto and climb over kayaks and boats, obviously for masturbation purposes, as he did while in captivity. He seems to favor yellow and blue kayaks, and even jet skis. He also sank wooden boats by pushing them down until water went inside. | Susan Butler,
Tony Mignucci,
Jim Reid |
| 53 | <i>Blue Spring, Florida:</i> Observed during release of BS822 Lesley after almost 3 years in rehabilitation for watercraft injury. She would roll herself onto her back to not let the vet or release staff touch the area of the healing wound. She traveled in the truck to the release site on her back and was released on her back. | Cora Berchem |
| 54 | Two Notch swam upriver to Manatee Springs State Park and stayed for 6 weeks. This individual seemed to enjoy being around Susan, so Jim was able to free tag it. After that, they had difficulty getting close to him again. | Susan Butler,
Jim Reid |

Behavioral ecology

Navigation

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| 55 | <i>(Tmm)</i> In one case in Belize, the manatee “Gina” went 17 mi [27.3 km] and then turned around and went straight line along the same path over deep open water, back to her starting point. This was at night. | Susan Butler,
Jim Reid |
| 56 | <i>(Tmm)</i> In Belize, Buddy had tagged manatees off a coral atoll; one periodically would swim across deep water with stiff current ~10 mi [16 km] to a specific river, then come back the same way. They made repeated trips like this and always hit the same location as if they knew exactly where it was. How do they navigate across deep water such a long way with apparently no cues? | Buddy Powell |
| 57 | <i>Susan:</i> Two younger males were tagged in Wakulla. They each cut across the gulf in a straight line toward the mouth of the Suwannee River instead of following the shoreline. | Susan Butler,
Jim Reid |
| 58 | A manatee, “Washburn,” was found off the north side of Cape Cod. He was relocated to the central Atlantic coast where there were other manatees. He stayed there awhile and then went out Ponce Inlet and down to Cape Canaveral. He went out farther east and took a straight-line trajectory to the Bahamas. This included night travel. | Susan Butler,
Jim Reid |
| 59 | A manatee from Blue Spring took a very directed path to a site ~1 to 2 mi [~1.6 to 3.2 km] away where several other manatees were feeding. | Tom O’Shea |
| 60 | Manatees will follow the side of the river, bypassing many potential inlets but then abruptly turning into a particular one as if they were headed there specifically. | Tom O’Shea,
Buddy Powell |
| 61 | Manatees go to calm water in storms. They slowly explore (mapping) routes. They will bypass various outlets to go on specific routes. | Nicole Bartlett,
Monica Ross |
| 62 | Manatees in Kings Bay were often observed traveling ~12 miles [~19.3 km] out to estuarine grass beds in late afternoon and then returning to the Bay by morning. | Susan Butler,
Jim Reid |
| 63 | <i>Jim:</i> Experienced adult manatee in a new environment (tagged animals in the Bahamas); “Georgie” and “Rita” (cow–calf pair) did circumnavigation and came all the way back around, finding the narrow channel back to the original starting point. | Susan Butler,
Jim Reid |
| 64 | I’ve watched manatees carefully trace the borders of intricate canal systems. I’ve also lost a manatee only to have the pilot send a picture showing that the manatee found a narrow break in the seagrass to pass through that I couldn’t see from the boat. | Athena Rycyk |
| 65 | <i>(Ts)</i> It was consistently alleged by many fishermen fishing in Moko River that manatees “love” to appear when the moon is full and that this is why they are mostly sighted at full moon. | Jean-Pascal
Koh Dimbot |

Mother–calf interactions

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| 66 | In Port Everglades, Florida, it was common to see several calves parked in the basin with Moms out feeding. They would then come back to where the calves were. | Susan Butler,
Jim Reid |
| 67 | Nicole recalled a time when five to six calves were parked at Blue Spring. All the calves would go out to meet a mom when she returned. | Nicole Bartlett,
Monica Ross |
| 68 | Parking of calves by moms—they both agree it happens. In Fort Lauderdale, Florida, there appears to be a “nursery.” In the Wakulla River, they saw three small calves separated by hundreds of yards, with no adults nearby, in an area with abundant grass beds. This suggests parking. It is a shallow river system. | Susan Butler,
Jim Reid |
| 69 | <i>(Tmm) Buddy:</i> In the Dominican Republic recently, there was an “orphaned calf” that was picked up and brought to the national aquarium. But then they found a large manatee hanging around in the same place. They took the calf back, and the next morning they saw the calf with the large manatee, likely its mother. So, parking can be confused with orphaning. | Tom O’Shea,
Buddy Powell |
| 70 | When alligators are present, the mother will position herself between the alligator and calf. | Cathy Beck,
Bob Bonde |
| 71 | Pat observed a 12 ft [3.6 m] alligator positioned over a calf. A large female got underneath the alligator and lifted it out of the water. No change by alligator. Female lifts it again. No change. Female lifts it again, higher. Alligator moved away, and the female followed it. This was different than usual. The female clearly wanted to move the alligator away. | Cora Berchem,
Pat Rose |

72	Moms will put themselves between the calf and a human as if protecting it.	Susan Butler, Jim Reid
73	Sleeping on the back is common as is floating down the run upside down. One mother in the middle of the water column nursed her calf upside down.	Wayne Hartley, Jennifer McGee
74	Wayne saw a calf nursing once, and a 2 to 3 year old came up and banged on it until it detached. The 2 to 3 year old then began nursing.	Wayne Hartley, Jennifer McGee
75	We have detailed systematic observations on a Blue Spring calf born during summer 1979, nursed for two winters (1979-1980 and 1980-1981) and weaned in summer 1981. The mother was pregnant in winter 1981-1982 but returned to Blue Spring without a new calf in winter 1982-1983. Instead, the mother had re-adopted its calf born in 1979 and nursed it throughout the entire winter. Clearly, there was recognition between the mother and the previously weaned offspring.	Tom O'Shea
76	They tagged a cow-calf pair ("Susan" and "Casey") at Port St. Joe; the Mom took off, and the calf stayed nearby. The adult went ~100 yds [91.4 m] and then turned around and came back to the calf. They then left together.	Susan Butler, Jim Reid
77	Nurturant behavior toward deceased calves in late summer 2018 and 2019 in the Narrows of the ICW of Pinellas County. Suspected cow pushing deceased perinate similar to behavior observed by <i>Tursiops</i> in local waterways. Each instance was observed by the public and reported via stranding hotline. Confirmed with video provided by public.	Kerry Sanchez
78	Manatees stay with carcasses. One mother came to Blue Spring 1 to 1.5 weeks after the calf carcass had been removed. Mothers will show subdued behavior for several days after death—contrasted with active behavior prior to death.	Cora Berchem, Pat Rose
79	When monitoring mother-infant pairs of <i>Tmm</i> at Blue Spring with good acoustic equipment, I would hear resting females vocalize when their young had ventured away; the young quickly responded by returning to their mother's side, some vocalizing in return all the while back. Mothers often vocalized to signal readiness to let the calf know it was time to suckle, regardless of how close or far the young might be. Non-offspring calves/other <i>Tmm</i> generally did not respond to the maternal calls.	Tom O'Shea
80	Mother banged its head on a calf when it approached Bob.	Cathy Beck, Bob Bonde
81	I've recorded vocalization changes in the presence of alligators at Blue Spring.	Tom O'Shea
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	<i>Interactions with conspecifics</i>	
82	We have seen manatees approaching each other nose to nose ("kissing") upon greeting. Perhaps individual or group recognition.	Cathy Beck, Bob Bonde
83	<i>St. John's River, Florida, 6 to 7 ft [1.8 to 2.1 m] visibility:</i> After 20 to 30 min separation, manatees meet and come up nose to nose. Could not see each other. Did not circle. Direct approach. Localization is precise. Could be auditory cues. They are in the middle of the river so are not following shallow water cues.	Cora Berchem, Pat Rose
84	<i>St. Mary's, Georgia:</i> Out on the boats, we often saw manatees that were actively swimming until they met up with another manatee, and it appeared they were investigating each other. If that manatee wasn't the one the other was looking for, it would continue to swim until it found a specific individual.	Tiare Fridrich
85	Manatees show comforting behavior such as tender touches.	Cora Berchem, Pat Rose
86	<i>Magnolia Springs, Crystal River, Florida:</i> I observed an injured medium-sized adult manatee near a bank. Two other similar-sized manatees had "bracketed" their injured comrade and appeared to be providing support and protection.	Don Dematteis
87	<i>Blue Spring, Florida:</i> Observed three different females mourning lost calves. In one instance, a juvenile manatee almost seemed to lend "emotional support" to a grieving mother for several days.	Cora Berchem
88	Wayne Hartley reports examples of comforting—"Tiffany" or "Felicity."	Cora Berchem, Pat Rose
89	Five to six males were seen interacting with a deceased manatee. Not comforting.	Cora Berchem, Pat Rose
90	Males in mating and cavorting herds attempting to mate with a deceased female of varying degrees of decomposition from fresh to moderately decomposed (2018, 2019, and 2020 during the late spring and summer months; reported by the public via a stranding hotline). The animals have been observed for several days in some instances (2020) and in groups ranging from two males to a minimum of five males. Confirmed via video sent by public and in-field observations by responders.	Kerry Sanchez
91	Playing with crab trap buoys (one of the most interesting examples was a juvenile manatee and juvenile dolphin playing interspecies tether ball), anchor lines, ladders, float toys, and drifting debris from docks and boats.	Mike Birns
92	At Warm Mineral Springs (between 1999-2004; I'm not sure of the exact date), I saw several manatees chewing a plastic Walmart bag and passing it between them to investigate it before losing interest. I then removed it from the water so they wouldn't eat it.	Lucy Keith-Diagne

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	93	Two manatees in the spring found some pantyhose and were playing with it while keeping a third manatee from getting it as if playing keep away. Another manatee was playing with a t-shirt by rolling it with its flippers. Some will play with sticks and grab measuring poles from people in the water. One female would swim under Wayne regularly and bump up against him.	Wayne Hartley, Jennifer McGee
	94	I have seen them cooperate to move a piece of driftwood blocking the egress at Three Sisters Springs.	Mike Birns
	95	Two tagged male manatees would always be seen together as if they were buddies.	Susan Butler, Jim Reid
	96	<i>Play:</i> Calves seem to be more interactive with each other than adults; this may be play related to later cavorting behavior.	Tom O'Shea
<i>Mating behavior and birthing</i>	97	<i>Crystal River, Florida:</i> There is an amorous male that will try to find satisfaction on boat pontoons, pilings, people, and other manatees.	Mike Birns
	98	<i>Jennifer:</i> A male on the periphery of a mating herd latched onto her kayak and was “practicing” mating behavior.	Wayne Hartley, Jennifer McGee
	99	I observed a friend in a wetsuit being humped by a male manatee with an erection.	Roger Reep
	100	Males hanging onto a dead female carcass—seen many times.	Wayne Hartley, Jennifer McGee
	101	<i>Jennifer:</i> A female beached in a New Smyrna inlet to avoid a mating herd; the males waited in the water for her to return.	Wayne Hartley, Jennifer McGee
<i>Defensive behavior: Avoidance</i>	102	<i>Crystal River, Florida—Entire refuge, entire winter season:</i> I watched manatees avoiding swimmers/snorkelers frequently, including myself, diving so close under the person that physical contact seemed unavoidable but didn't happen. I observed this in clear and totally murky water. For example, snorkeling back to the FWS pontoon pavilion at King Springs, not seeing a single manatee. Getting up on the platform, I saw that I had swum through a group of three manatees without noticing.	Nicola Erdsack
	103	In Weeki Wachee, Florida, Jennifer has seen manatees grouped in an area where humans do not usually go to avoid people that do come into the area.	Wayne Hartley, Jennifer McGee
<i>Defensive behavior: Escape</i>	104	During a manatee distribution survey in St. Joseph Sound in Clearwater, Florida, I witnessed two adult manatees and one small calf being pursued by 40 or 50 small sharks (species unknown). The sharks were swimming quickly. When they approached the three manatees, the adult manatees stopped swimming and positioned themselves between the sharks and the calf with their noses toward the calves and tails out (like seen in some whale species). The sharks approached at a high rate of speed to within about 20 or 30 ft [6 to 9 m] of the manatees and then suddenly retreated. This looked to be a protective or defensive posture on the part of the manatees. The sharks appeared to have sensed the size of the manatees and stopped their pursuit of them.	Holly Edwards
	105	Alligators have gone after the tag float. There are some manatees with shark bites.	Cora Berchem, Pat Rose
<i>Aggression</i>	106	Pat does not know of any instances of attacks by alligators on manatees. Possible, but has to be rare—maybe eating a calf or a sick calf, or scavenging.	Cora Berchem, Pat Rose
	107	Monica has seen manatees lift alligators, birds, and people out of the water.	Monica Ross
	108	A manatee was following a 7 to 8 ft [2.1 to 2.4 m] alligator. Alligator got away onto a log. Manatee investigated its tail and then went belly up and waved its flipper in the face of the alligator. Other examples on video.	Cora Berchem, Pat Rose
	109	An alligator was resting, and several adult manatees were playing, rolling over the alligator, who left after about 20 min. The next day, juveniles were playing and tried to play with the alligator, but he left.	Wayne Hartley, Jennifer McGee
	110	Female manatees have swum between Pat's legs and lifted him up. Very deliberate; they wanted to engage. This has happened more than once.	Cora Berchem, Pat Rose
	111	<i>Crystal River, Florida:</i> Two females were fighting over who got to play with one of our male in-water guides. They went so far as to even nip each other's tails when they felt the other was hogging one of the guides all to herself.	Vincent Maida
<i>Exploration, inspection, and wariness</i>	112	Manatees watching an alligator hunt. Alligator stays still until it makes a sudden movement to catch a fish. Manatees startled, and it was contagious.	Cora Berchem, Pat Rose
	113	<i>Wayne:</i> Early Florida manatee researchers said they would shine a light in the Blue Spring boil at night to see how many manatees were there (they avoided it during the day due to human swimmers), and the manatees would scatter. Is this retained learning from early human hunting predation? Now the manatees in the spring are accustomed to humans and mostly ignore them.	Wayne Hartley, Jennifer McGee
<i>Foraging and eating</i>	114	(Ts) African manatees will take fish out of fishermen's nets. Lucy Keith-Diagne found that they eat clams regularly in some specific locations, up to 40 to 50% of their diet. (Buddy and Tom reporting Lucy's observations)	Tom O'Shea, Buddy Powell
	115	(Ts) Buddy saw African manatees attracted to hippos in the water and ingesting hippo feces. (Tom reporting Buddy's observations)	Tom O'Shea

	116	Manatees in the Florida Keys eat scraps of fish at places where humans are cleaning them.	Tom O'Shea, Buddy Powell
	117	One manatee, "D-Cow," ate a rat.	Cathy Beck, Bob Bonde
	118	Manatees also root through substrate, eating sand or clay, as reported for African manatees.	Cathy Beck, Bob Bonde
	119	Tom O'Shea sometimes observed manatees at Blue Spring, Florida, ingesting manatee feces when confined to the spring during long cold spells.	Tom O'Shea
	120	<i>Wayne</i> : A manatee had 2 ft [0.6 m] of rope hanging out of its mouth. A researcher grabbed and pulled it, resulting in about 6 ft [1.8 m] coming out. Another manatee was seen with 1 ft [0.3 m] of rope hanging out. These are two examples of eating and swallowing rope.	Wayne Hartley, Jennifer McGee
	121	The sound of a broken branch attracts other manatees. Sound presumably suggests availability of food as when a mangrove branch drops. They are also attracted by the sound of munching on food and to devices that generate clicking sounds.	Cathy Beck, Bob Bonde
	122	<i>(Ts) Liberia</i> : Manatees have been observed going into farmers' corn fields when the area has flooded during the rainy season. They proceeded to eat the maize growing in the farmers' fields. The farmers fed the manatees potato greens to keep them away from their maize.	Hoslo Jiwa
	123	<i>(Ts)</i> I happened to catch manatees eating <i>Crinum natans</i> at the Ndogo Lagoon in Gabon, specifically near the village of Pitonga. At this place, the turbidity is very low during the rainy season in the areas of direct contact with the forest trees, and the depth is less than 3 m. When manatees are aware of human presence, with their flippers, they lift the sand of the bottom by covering it and move so as not to be within our reach.	Christy Achtone Nkollo Aganga
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<i>Cognition</i>			
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<i>Sensory perception:</i> <i>Touch</i>	124	Bob Bonde and Cathy Beck report that manatees get around objects and people without touching them even in dark water. Although detection of sound in some cases cannot be ruled out, sensitivity to changes in hydrodynamic flow is a likely possibility.	Bob Bonde, Cathy Beck
	125	Manatees are hard to approach, although if they are cavorting, sounds are masked. Their tails twitch when they sense a person.	Nicole Bartlett, Monica Ross
	126	Jim commented on how dialed in manatees are to human presence. In Puerto Rico, he would be in water in quiet mode, and a tagged animal would swim to him from ~100 yds [91.4 m] away, and then turn around and go the other way as if saying "I thought it was you."	Jim Reid, Susan Butler
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<i>Sensory perception:</i> <i>Hearing</i>	127	Attracted to hoses and clickers.	Bob Bonde, Cathy Beck
	128	Monica reports that they can recognize boats, and observers may need to switch boats to get near manatees. They will also avoid some swimmers who are having difficulty putting a tag on, and the new swimmer will easily put the tag on. They recognize not only the sound of boats, but they recognize individual people even with no visibility.	Monica Ross, Nicole Bartlett
	129	Manatees recognize individual boats and will maintain ongoing behavior. They may leave in response to novel boat sounds.	Bob Bonde, Cathy Beck
	130	<i>Jim</i> : With early VHF tracking in the Fort Myers area (~1986), Matt Clemons would hear the tag transmitting on the way toward the area it was in, but as he got closer, the manatee would move away as if it had detected the boat and associated it with Matt. Jim suspects they can identify specific motors. Susan agreed that they recognized the boat they used.	Jim Reid, Susan Butler
	131	<i>Buddy</i> : They seem to recognize specific boat noise. In Belize, after several days of captures, they relocate as if hearing the boat coming.	Tom O'Shea, Buddy Powell
	132	<i>Jennifer</i> : Two manatees ("Bonnie" and "Dooley") that were chronic entanglers came to recognize the rescue truck's sound and would leave when they showed up at the boat ramp but not when other vehicles were at the ramp. This implies that they recognized individual truck sounds.	Wayne Hartley, Jennifer McGee
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<i>Sensory perception:</i> <i>Vocalizations</i>	133	<i>(Ts)</i> An orphan manatee calf we raised in a lagoon enclosure in Gabon would emit high-pitched squeaks when I entered the water with him. I asked if other caregivers experienced this, but none of them had put their heads underwater to hear him! In Florida, I heard the same squeaks when approaching calves in the water.	Lucy Keith- Diagne
	134	<i>(Ts)</i> The previous anecdote accords with my observations. Buddy had a captive orphan <i>Ts</i> calf at his camp on the Bandama River in the Ivory Coast when I visited in about 1987. It too made high-pitched squeaks when people entered the water to bottle-feed it. I recorded some of these sounds (they seemed very faint) at the time. Overall, they were similar to calls of <i>Tmm</i> calves. About a year ago, I turned these tapes over to Athena Rycyk. I believe they were put to use for her recent unpublished studies of sounds of <i>Ts</i> , a welcome overdue effort.	Tom O'Shea
	135	Vocalizing in transport truck (2012-current) was observed in approximately 25% of transportations of healthy manatees (i.e., transfers between facilities, to release site, during relocation). We have observed this between same and different sex pairs and pairs of differing age groups. Vocalizing occurs in the majority of cow-calf transports and "appears" to increase in frequency when calves are unstable and thus transported in pools of water not touching the cow.	Kerry Sanchez

Manatee Anecdotes: Conservation and Management

	136	<i>Crystal River, Florida:</i> I watched two adolescents interacting. One started up a canal I knew to have some not so sensitive local residents. After the older one squeaked what I recognized as a warning sound, it turned around and did not go up that canal. I noticed this behavior 3 days in a row.	Mike Birns
	137	Monica suspects that maternal vocalizations toward calves are lower frequency than other vocalizations.	Monica Ross
	138	<i>(Ts) Lake Ossa, Cameroon—Mother calling calf:</i> When analyzing recordings of African manatee via passive acoustic monitoring I conducted in Lake Ossa, I noticed continuous calls (vocalizations) from a manatee. The calls occurred at a regular frequency and were almost identical during approximately 5 seconds. Then another manatee vocalization (different from the previous) occurred on the spectrogram, putting an end to the previous calls. It was very likely a mother calling her calf.	Clinton Factheu
	139	<i>(Ts) Lake Ossa, Cameroon:</i> Preliminary results from African manatee passive acoustic monitoring I participated in revealed that manatees vocalized mostly during nighttime. This is likely an avoidance of human presence.	Clinton Factheu
	140	<i>Blue Spring, Florida:</i> Mother calling to her calf to make it come to her. Calf nudging and vocalizing to get resting Mom’s attention. Mother rolling over when calf is “annoying” her.	Cora Berchem
<i>Sensory perception: Vision</i>	141	<i>Jim:</i> They needed to do a tag change on Two Notch who was in Wakulla Springs with 30 to 40 manatees present; most manatees were moving around, surfacing to breathe, etc., in the presence of Jim and Susan, who were being as still and quiet as possible. From the other side of the spring, Two Notch began to approach their vicinity, but when about 40 ft [12.2 m] away, he turned his head as if looking at them with first one eye and then the other. He then turned around and swam away down the run.	Jim Reid, Susan Butler
	142	<i>Blue Spring, Florida:</i> In the 1970s, manatee seen eating hyacinth. Manatee Howie saw a hyacinth against black wetsuit (lavender-blue with yellow center) and made a beeline from 25 to 30 ft [6 to 9 m].	Pat Rose, Cora Berchem
<i>Sensory perception: Chemical senses</i>	143	<i>Cora:</i> Rubbing of belly and genital area on things. Sometimes playful.	Cora Berchem
	144	<i>Jen:</i> Snooty was very interested in her mint gum.	Wayne Hartley, Jennifer McGee
<i>Sensory perception: Thermoregulation</i>	145	<i>Pat:</i> At Steinhatchee River, Florida, it was quite cold, and a young, malnourished adult needed to find warm water. Found a small spring. Only had head and upper body in warm water.	Pat Rose, Cora Berchem
<i>Learning, memory, and knowledge</i>	146	Manatees learned to go under nets. They became net-wise.	Bob Bonde, Cathy Beck
	147	Scarred adults are more hesitant around boats.	Cora Berchem
	148	<i>Cora:</i> At Homosassa, resident manatees know feeding time. They do not wait for a person; they know the time without immediate people cues.	Pat Rose, Cora Berchem
	149	<i>Cora:</i> Manatees know when locks open and will congregate there. <i>Pat:</i> This occurs at multiple locations—other water control structures, not just locks. They wait at appropriate times for them to open.	Pat Rose, Cora Berchem
	150	Manatees wait at locks and flood control gates for them to open.	Bob Bonde, Cathy Beck
	151	In 1998, at the Ortona Locks on the Caloosahatchee River, I saw two manatees at the surface outside the lock but near the doors. As a boat approached and the doors opened, one manatee swam inside the lock, but when it saw that the other manatee wasn’t following, it went back out and started nuzzling it around the face (I have photos of this). The second time the doors opened, the first manatee swam into the lock and the second one followed. They then swam to the far end, waited for the downstream doors to open, and both swam out. It definitely appeared to me that one manatee was showing the other how to navigate the lock.	Lucy Keith-Diagne
	152	Manatees on the East Coast will take ocean routes for travel. (Some take open ocean routes, but many use the Intracoastal Waterway for all or parts of their seasonal journeys.) They will wait and ride tides for traveling and to get to food. They will stay offshore in Georgia and South Carolina to travel because river/estuary routes are slow. One lock closed for a year, but they were back the next year to get through. In the Key Biscayne area, they will time lock openings to coincide with the tides from the seawater side, but show up at the same time on the freshwater side. Animals going in opposite directions swim past each other.	Monica Ross, Nicole Bartlett
	153	<i>Tom—Site fidelity:</i> Tagged animals on the Atlantic coast would migrate south as if they knew exactly where they were going. This would be repeated from year to year. They likely learn these routes as calves from their mother.	Tom O’Shea, Buddy Powell
	154	Waiting for the tide to proceed on routes. Perhaps evidence of planning/selection among options.	Bob Bonde, Cathy Beck
	155	<i>(Ts) Rivers of Moko and Ndian, Cameroon:</i> In rivers experiencing high and low tides, manatees swim up the rivers during high tides and swim downstream during low tides.	Jean Pascal Koh-Dimbot
	156	At Warm Mineral Springs, we documented the same individuals (by scars/photo ID) returning every winter—some for 15 years.	Lucy Keith-Diagne

- 157 *Crystal River, Florida*: Each year, they know the boundaries of Magnolia Spring. If you are in the water observing them, they pass that boundary line and immediately turn around and just stare at you, almost like saying, “Ha, you can’t come here, and I know I won’t be bothered in here.” Vincent Maida
- 158 *(Ts) Liberia*: Manatees have been observed going into farmers’ corn fields when the area has flooded during the rainy season. They proceeded to eat the maize growing in the farmers’ fields. The farmers fed the manatees potato greens to keep them away from their maize. Hoslo Jiwa
- 159 *2020 and 2021*: In rehab, manatees will actively avoid gates when shifting, and it appears to be individual-specific. Some animals readily shift and appear to investigate pools that likely have negative history (i.e., pools used for health assessments, taking weights, etc.), while others actively avoid shifting into those pools if specific criteria are met (i.e., other gates are closed, and egress is prevented). Manatees recognize individual boats and will maintain ongoing behavior. They may leave in response to novel boat sounds. Kerry Sanchez
Bob Bonde,
Cathy Beck

*Interactions with objects,
other species, and people*

- Interactions with objects*
- 160 They will grab flippers. Monica Ross,
Nicole Bartlett
- 161 *Tom—Play*: Calves seem to be more interactive with each other; whether this is play or early cavorting learning is unclear. Curiosity with foreign objects such as sticks on bottom and chewing on human flippers. Use mouth to palpate objects and other manatees. Tom O’Shea,
Buddy Powell
- 162 *Buddy*: Playing with ropes—mouthing. Tom O’Shea,
Buddy Powell
- 163 *Tom*: Manatees will mouth tag belts on other manatees. Tom O’Shea,
Buddy Powell
- 164 Tag belts do not interfere with feeding or mating. This can be viewed as an inadvertent experiment. Tom O’Shea,
Buddy Powell
- 165 *Buddy*: They will also chew on and hold the floating tag part in their flippers. Tom O’Shea,
Buddy Powell
- 166 They play with dive flags and shirts using their muzzle. They steal cameras and will play cat and mouse, taking off with objects like a dog. They will carry pond fronds under a pectoral flipper and lie on the bottom holding fronds. Bob Bonde,
Cathy Beck
- 167 They will roll rocks along the bottom. Roger Reep
- 168 *Cora—Boat (research canoe)*: Calves and juveniles are “friendly” with boats. They put flippers in boats, which Cora tries to avoid. Cora Berchem
- 169 They play with ropes and hydrophone cables in the spring, rolling up in them. Wayne Hartley,
Jennifer McGee
- 170 *Wayne*: A palm limb fell into the spring, and several manatees put their heads on the limb. Wayne Hartley,
Jennifer McGee
- 171 *Blue Spring, Florida*: Investigating objects on the bottom (rocks, submerged palm fronds). Digging in the sandy substrate. Climbing on/rubbing on submerged or partly submerged logs. Pushing palm fronds, sticks, logs, and cinder blocks around the spring run. Investigating any sort of “foreign” or “new” objects in the spring run—trash items/plastic/signs/fallen wooden transect markers. Cora Berchem
- 172 *Crystal River, Florida*: They play with anchor lines, boat fender buoys, and with swimmers’ masks, hair, and wetsuits. Justin Strickland
- 173 *Crystal River, Florida*: A manatee became entangled by the manatee sanctuary boundary ropes that float on the surface. This particular manatee did this without any influence from swimmers or other manatees. Justin Strickland
- 174 At Warm Mineral Springs (between 1999-2004; I’m not sure of the exact date), I saw several manatees chewing a plastic Walmart bag and passing it between them to investigate it before losing interest. I then removed it from the water so they wouldn’t eat it. Lucy Keith-
Diagne
- 175 *Observed over an 8-year period in Florida*: Manatees in the wild and in rehab manipulate natural items (e.g., palms, grasses, ducks, turtles, fish) in the environment. Recently, we received video of a group of manatees in rehabilitation manipulating and presumably playing with palm fronds that blew into the water during a storm. They rearrange logs and pursue ducks, pelicans, and turtles in their habitat. Kerry Sanchez
- 176 *Canal in front of Three Sisters Springs, Crystal River, Florida*: Manipulating with oral disc/sucking at ropes, anchors, propellers, hands, feet, surface of the kayak, and snorkel gear. Pushing kayaks and rubbing at kayaks, canoes, boats, and docks. *Crystal River at King Springs Sanctuary*: Grabbing the kayak from below with both pectoral flippers (probably a frisky male). Nicola Erdsack
- 177 Jennifer and Wayne have seen manatees seem to attempt to get stuff out of their teeth using their flippers. Also scratching the eyes. Chewing on ropes may be a form of flossing. Wayne Hartley,
Jennifer McGee
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<i>Interactions with other species</i>	Relevant anecdotes are listed under previous categories. See text for examples.		
<i>Interactions with people</i>	178	Monica has seen manatees lift alligators, birds, and people. They have head butted Monica and bumped boats. Monica thinks the lifting behavior is play. She did not consider butting to be play. These behaviors are not just observed at warmwater sites. Nicole confirms the lifting out of water in dark water.	Monica Ross, Nicole Bartlett
	179	Wayne has been in his canoe and lifted up out of the water by a manatee many times. It is the same ones that do it repeatedly. He interprets it as play, perhaps involving a component of rubbing behavior.	Wayne Hartley, Jennifer McGee
	180	The manatee “Donna” was laying her head on a sock on the bottom. “Doyle,” another manatee, came up and grabbed the sock and swam off and then stopped and looked back as if playing. Once, researchers wanted to net a female that had a calf, so they positioned the calf near the net hoping it would call and they could catch Mom. But she did not approach, and they gave up. At this point, the calf immediately swam to Mom as if she called it.	Wayne Hartley, Jennifer McGee
	181	<i>Crystal River, Florida:</i> One individual liked to sneak up behind people and goose them. The higher they jumped and the louder they squealed, the more victory rolls he did. This manatee was dubbed “Chester the Molester” for that and other behaviors.	Mike Birns
	182	<i>Jennifer:</i> At Crystal River and other areas, if people are standing in water with flippers on, manatees will often put their head on the flippers. Wayne described a similar event in Blue Spring where four divers were standing and a single manatee was laying on all their flippers.	Wayne Hartley, Jennifer McGee
	183	In January 2006, when I was free-tagging manatees in very clear water at Riviera Beach Power Plant, my intern and I got in the water and swam around the warmwater discharge with ~200 manatees, looking for one that was the best size to slip the belt onto. While we were considering it, we stopped in the water to chat. As we were there, a group of calves, about six to 10 animals, surrounded us. When we put our heads underwater to see them, they were all chirping away and watching us. One guy came over and nuzzled my knee, then backed up and continued chirping away with the others. My intern and I felt they were clearly discussing us What were we? What were we doing? It was so funny. We laughed about it and wondered what they had decided! They were very tame, and we were able to scratch a few of them before swimming off to continue our work.	Lucy Keith- Diagne
	184	<i>(Ts) Gabon:</i> An orphan calf and another subadult African manatee we caught to tag (both were in Gabon, 2009-2013) made a gesture of putting their flippers over their mouths. The orphan calf did it when he no longer wanted his bottle or if someone got in the water with him, and he appeared scared at first (as evidenced by him swimming rapidly to the other side of his enclosure). The captured manatee did it when he was caught by the tail in a net and likely was scared.	Lucy Keith- Diagne
<i>Mimetic behavior and social learning</i>	185	I have quantified synchronous breathing between resting mothers and calves from our unpublished Blue Spring cow-calf research. It occurs fairly frequently when they are resting close to each other, sometimes cued by a single call note, but I suspect mostly by tactile sense from water in motion. The synchronous breathing is not usually truly synchronous to the split second, and often one is rising a few to several seconds behind the one that may be sinking after the breath.	Tom O’Shea
	186	Pat and Cora have seen synchronous breathing done without body contact. Also, they have seen synchronous breathing when the manatees were swimming rapidly.	Pat Rose, Cora Berchem
	187	Rehab manatees near wild manatees will within a week eat the same food in a similar location. In captivity, they will eat sooner if another manatee starts first. Animals that had experience prior to rehab will feed right away in the wild. Naïve animals will take longer.	Monica Ross, Nicole Bartlett
	188	A female manatee swam toward me and stopped about a meter away, staring at me. My nose itched, and I scratched it with my right hand. Like a mirror, she rubbed her snout with her left flipper. I did it again to see if it was a coincidence, and she mirrored me again. So I rubbed my nose with my left hand, and she put her right flipper to her snout.	Mike Birns
	189	While tracking manatees (probably in the 1990s), I was in a boat alone at the AF hanger basin, Kennedy Space Center, Banana River. This is a favorite hangout area for manatees to rest in the boat channel, access fresh water, and forage on the adjacent shoals. Depths outside the channel were in the 2 to 4 ft [0.6 to 1.2 m] range. With no wind, the water was glassy smooth, and no other boats were out. There were at least a few dozen manatees bottom resting and moving about. While quietly watching and listening to the ultrasonic receiver for sonic-tagged manatees, I caught a glimpse of a manatee raising his head high above the water. Watching more intently, I saw a subadult-sized manatee rise up slowly until his head and pectoral flippers were well above the surface, then he slowly fell over. Another subadult dozens of feet away did the same behavior. Over the next 15 min or so, I watched this happen at least 20 times, involving maybe five to six subadult manatees, with the same individuals likely repeating the behavior. While some were in close proximity to one another, most were 50 to 100 ft [15.2 to 30.4 m] apart over an area of estimated 200 × 200 ft [60.9 × 60.9 m] on the shoal. The only mechanism for this was for the individuals to tuck their tails underneath them until the dorsal surface of the tails were flat on the shallow shoal, extending their bodies to rise up with their heads and anterior trunks clear of the water until gravity overcame stability, and then they tipped over.	Jim Reid