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MEET
THE MANATEES



The sailors of long ago knew their charm. We were about to rediscover it.

Many speculate that the mermaids so prevalent in maritime lore were actually manatees — large, gentle marine mammals. While our interest was probably much less hormonal than our sailing counterparts of years past, the desire was just as strong.

We'd all come to Crystal River, Florida in hopes of coming face-to-face with an animal that might soon disappear from the planet, becoming no more than a memory.

Or another myth.

In light of the manatee's endangered status, some concerned citizens and environmental groups believe that people should stay out of and off of the water when the sea cow comes to town. They'd rather see encounter programs extinct **by Vince Rhodes** before the same fate befalls the manatee.

But for better or for worse, we gathered that Saturday morning to answer the siren's call — or more precisely, the Sirenian's call.

meet the manatee





DOUG PERINE

THE MANATEE FAMILY TREE

The West Indian manatee (*Trichechus manatus*) belongs to the order Sirenia and evolved from four-footed land mammals which entered the water over 60 million years ago. The presence of undeveloped pelvic bones are mute testimony to the manatee's terrestrial beginnings.

The West Indian manatee is one of the four surviving species in its order. Steller's sea cow (*Hydrodamalis gigas*), a fifth species, grew to almost 35 feet in length and weighed several tons. The only cold-water sirenian, it fed exclusively on marine algae. Discovered by Steller, a ship's doctor, in the Bering Sea in 1741, it was hunted to extinction in only 27 years.

Consisting of one species of dugong and three species of manatees, the living sirenians are tropical and sub-tropical in distribution. In the past, the dugong (*Dugong dugon*) could be found in many areas. Now, it's limited to coastal regions of the Indian and Pacific oceans with the largest populations found in the waters of northern Australia.

Manatees can be found along both the eastern and western tropical coasts of the Atlantic. Information is scarce on the West African manatee (*Trichechus senegalensis*) which makes its home in the coastal waters and rivers of western Africa. What is known, however, is that the population has been greatly reduced by hunting and netting.

The Amazonian manatee (*Trichechus inunguis*) isn't doing much better despite legal protection. Found in the fresh waters of the Amazon basin, populations are still threatened by illegal hunting. And ineffective enforcement fails to turn the tide of decimation begun centuries ago.

Cool winters, deep water and strong currents have combined to segregate the remaining population of West Indian manatees. Although this species can be found from the southern U.S. to the northeast coast of Brazil, recent studies of skull characteristics have shown evidence of

genetic isolation. The manatees found in the southern United States, or Florida manatees, are a distinguishable sub species (*Trichechus manatus latirostris*).

MARINE MAMMALS 101

Before our encounter comes education. Bill Cirimo of Sea Ventures Marine Education Institute has been teaching this education pro-

waters. Approximately 300 winter in the Crystal River National Wildlife Refuge (CRNWR). That may be as much as 50 percent of the Florida west coast population.

Exceptionally large manatees have reached lengths of 13 feet and weights of 3,500 pounds but the average manatee is actually closer to nine feet in length and weighs about 1,200 pounds. Generally, females are



WATER STEARNS

Manatees are attracted to the warm spring waters found throughout Florida.

gram for five years. He conducts classes at Bay Point Dive Center from November to March — the season when manatees seek out the warmer waters of Crystal River.

The most recent population survey indicates there are a minimum of 1,856 manatees in Florida's

larger than males.

Depending on the age of the animal, manatees have three or four nails on their front flippers. These forelimbs are used both in navigation and to move food into the mouth. The manatee also uses its flexible upper lip to manipulate its meals.

The sea cow is uniquely adapted to its herbivorous diet — it constantly replaces teeth. As grinding molars wear out, they move forward in the mouth and eventually fall out.

Manatees eat the equivalent of about 10 percent of their body weight each day. Their digestive system is similar to that of other plant-eating animals such as horses or cows, with bacterial digestion occurring primarily in the hind part of the gut. In adults, the intestines can measure up to 130 feet in length.

In general, the manatee will eat and sleep throughout the day and night. During winter cold spells, however, activities such as feeding may be regulated by a diurnal temperature cycle. During these periods, manatees tend to search for food in the afternoon and evening when the water outside the springs is warmest.

Behind all the facts, figures and trivia we're absorbing, there's more than just a hint of environmental concern. "We want to get you thinking about conserving the manatees," Cirimo explains. "Man is directly related to the extinction of species."

That's about to become abundantly clear.

The next slide to illuminate the screen evokes an audible gasp. It shows a manatee with a series of slashes up its back. A boat has run over the animal lengthwise from tail to nose slicing completely through the skin in several diagonal cuts. It's not a pretty picture.

Soon an aerial shot of a large boat speeding through the water flashes onto the screen. Cirimo smiles. "This is our friendly speed-boater," he explains. Another image of the boat appears. "This is our friendly speed-boater as he flies through a manatee no-wake zone."

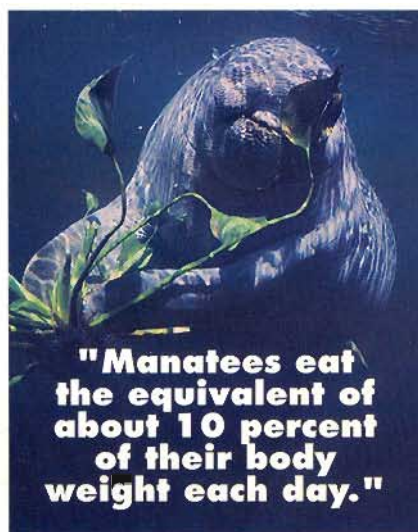
He points to the left of the screen, just out of the range of the slide. "This is where he was stopped by the Coast Guard and given a \$5,000 fine for speeding," Cirimo chuckles.

"Had he hit the manatee or, worse, killed it, he could have been fined \$10,000 and his boat seized," Cirimo's smile dies. "But

that still wouldn't bring back the manatee."

Manatee mortality is a definite concern because of the animal's slow reproductive rate. Most females begin to breed successfully by seven to nine years of age while males become sexually mature at age nine. The female attracts male counterparts with very low infra-sounds and scents in the water.

Fertilization takes approximately 20 hours and the female will mate with 12 to 15 males. The gestation period for manatees is about 13 months, producing generally one calf per pregnancy. Twin births have been reported, but are extremely rare. Newborn calves are generally about four feet in length and weigh about 66 pounds.



Calving occurs year round with an interval between births of three to five years, but researchers aren't sure if these births are enough to offset the deaths that occur. Additionally, data from the Florida Marine Research Institute indicates that infant mortality rates may be on the rise.

Cirimo doesn't want his divers to add to the problem. So, our education course concludes with some rules of engagement. "First," says Cirimo, "respect the animal's choice for an encounter. Let them come to you. Don't chase them — that's harassment. Second, be motionless when you're touching them. Don't try to pet them as you swim. There's a simple guideline — if your fins are moving while you're petting,

you're chasing.

"And third, if you find a manatee at the bottom, don't dive bomb. It may be sleeping or eating and you can break its natural cycle. Just be patient. Remember they come up to breath about every two minutes. Is everyone ready?"

"Then, let's go."

CLOSE ENCOUNTERS

Getting ready for our rendezvous, we grab snorkeling gear and wetsuits — 72 degree F spring water may be balmy for manatees, but it's a tad chilly for people. Equipment in hand, we board the pontoon boat and head out into Crystal River.

We go only a short distance away from the dock when Cirimo stops the boat to look for the tell-tale signs of sirenians. We scan the water for "footprints" (swirls created at the surface by the tail as the manatee swims) or gray noses poking out above the water's surface. In under a minute we sight one pair and then another and then another.

Shrugging on farmer johns and wetsuit jackets and quickly defogging masks, we slide as silently as possible into the water. The crew and divers still on the boat offer directions as they see more and more manatees from their elevated vantage point. "Remember not to splash when you kick," Cirimo calls out as we swim slowly away.

I hear it before I see it. Moving away from the other divers, I hear a quick snort. It has to be the sound of a manatee rapidly exchanging the air in its lungs. Turning slowly, I just glimpse the tip of a nose as it descends back into the river. I head slowly for the spot.

Ducking my ears under water, I hear an amazing sound — crunching. I can actually hear the manatee eating! Even though I can't tell which direction the sound comes from, I know I'm close. Suddenly, a face materializes in the murky water before me and I jump slightly. It just appeared out of nowhere. I was the one who'd been encountered.

Hearing that something is ten-feet long still doesn't prepare you for

seeing something that big. The manatee was huge. Looking at me for just a few moments, it soon turns its attention to the vegetation on the river bottom. Still watching the magnificent creature below me, I notice the traces of algae, the striations on its back and the inevitable nicks in its tail from previous boat encounters.

My heart begins to race as another manatee moves into view. After a moment, both swim away with their tails flapping gracefully as they disappear into the murk. With a foolish grin I lift my head from the water and float giving my overloaded senses the time to process every aspect of the meeting.

Another diver swims up to me and points just over my shoulder. She had spotted another one. We paddle quietly over to the spot where a sea cow busily munches. It pays no attention to us. We drift along with the current watching as it crunches continuously — its flippers and proboscis guiding more and more vegetation into its waiting mouth. After a few minutes, we leave the mammalian vacuum cleaner to its meal and go in search of others.

Swimming back toward the boat, I hear a high-pitched vocalization followed by a lower response. Slowing my pace, I'm soon rewarded with the sight of a mother and baby. As I watch in awe, the baby nuzzles behind the mother's flipper, probably nursing. When the baby finally catches sight of me, it swims under its mother to her far side. With a sigh, I leave the two to their lunch and seek the warmth of the boat.

Back on board, the few other divers taking a break are a sight to behold. Gesticulating emphatically, some describe their adventures in excited tones. Others sit and speak with hushed voices about this or that animal. There can be no doubt everyone has been profoundly affected by the encounter.

Feeling an irresistible urge to share my experiences, I begin to tell Cirno about the mother and baby I had seen. He smiles as he listens and then shares a few of his own encoun-

Manatee Rehab Program

Now you can come face-to-face with a manatee without even getting wet at Sea World of Florida's new exhibit "Manatees: The Last Generation?". One wall of the 300,000-gallon habitat is a 126-foot-long acrylic panel that allows you to glimpse these marine mammals in their underwater environment.

None of the manatees were captured for display purposes — they're all patients. In fact, opened in 1993, the exhibit is just an extension of Sea World's well-established manatee rescue and rehabilitation programs. "The whole reason for this exhibit is rehabilitation," explains Toni Caracciolo, public relations associate for Sea World of Florida. "It was getting to the point that we needed more space for the manatees we were trying to help. So, we decided to make it an educational experience."

The park works with federal, state and local agencies to help these marine mammals. A typical recovery starts with a call from a private citizen to the Florida Marine Patrol Manatee Hotline — (800) DIAL-FMP. After the report, either the FMP or Florida Department of Environmental Protection is dispatched to confirm the animal's status.

According to Dr. Mike Walsh, a staff veterinarian for Sea World of Florida,



PHOTO COURTESY OF SEA WORLD

All the manatees at Sea World of Florida are patients in the rehabilitation program.

well-meaning observers have occasionally called for help when it wasn't necessary. Rescue teams would head to the scene only to find a manatee was simply asleep or mating. This prompted the intermediate verification.

After the DEP or FMP has determined a manatee is actually in need of

assistance and not exhibiting some natural behavior, the Sea World rescue team heads out. Apprehending the manatee takes from four to eight people and that number doesn't include the team members that remain at Sea World to prepare receiving tanks and medical assistance.

Manatees brought in for medical treatment and rehabilitation fall into three categories: victims of watercraft trauma, orphans or those experiencing natural diseases. Walsh says Sea World is seeing more blunt trauma induced by boat collisions.

The scratches on the back and nicks out of the tail may be graphic reminders of boat encounters, but unseen injuries can be just as debilitating. The impact can break ribs, cause head injuries and even rupture internal organs. In these cases, the manatee can survive weeks or months before it finally dies from the injury.

The number of orphans rescued varies from year to year and no one knows why. It may be that, as in many species, first-time mothers don't always do the best job. They may be completely disinterested. "In many cases, the baby manatees never nurse and are never cared for," says Walsh. "They may be so hungry that they eat anything — even things they can't digest."

When an orphan is rescued, it receives round the clock attention. While 24 hour care, a warm environment and nutritional support help their recovery, these young invalids need something more. They have to learn how to be manatees.

"The big question," says Walsh, "is whether we can release these orphans. This new facility is a nice step down. They have fish and turtles in the tank with them. We also start putting food on the bottom so they get used to that."

Rita, an adult manatee that lives in the exhibit, also assists the orphans. "These baby manatees have been near humans around the clock," says Walsh. "We have to look to the future when they will be released. We want them to be as manatee-ish as possible. Rita helps socialize the babies."

In addition to demonstrating proper marine mammal manners and eating

by Vince Rhodes

habits, Rita's fecal material contributes vital bacteria to the habitat. Because they were rescued at an early age, many of these young manatees may lack the microorganisms they need.

But living in the wild is no guarantee that the manatee won't have problems. Cold snaps can cause young manatees with thin blubber layers to catch viral infections. And Walsh adds that some of the manatees they rescue require flipper amputation due to entanglement in monofilament fishing lines or crab pots.

Fortunately, there have been many advances in manatee medicine. More research centers and people have become involved. "We've radiographed manatees," says Walsh. "We've performed ultrasounds and administered the first anesthesia ever given to a manatee. For the most part, we've been very successful."

had broken some ribs and trapped air in the animal's lung cavity. As a result, Fathom had stopped eating and become very skinny.

But some creative thinking and the cooperation of a local company made the difference. Manatees have lungs which are completely separated from each other, helping the animal to regulate its buoyancy.

To compensate for the unnatural shift caused by the boat collision, the manatee was fitted with a wetsuit and it began to eat again almost immediately. Fathom was named for the manufacturer that provided this highly specialized wetsuit.

But the efforts of Sea World alone aren't enough. "All we're doing won't mean anything unless people get involved," says Walsh. "A lot of effort is being put in to help this species before it's too late. That's encouraging. It's hard

ters. In the middle of one of his stories, however, he stops abruptly and stares over my shoulder.

"Hey," he yells. "Hey, slow down! This is a no-wake zone!"

Turning, I see why he's yelling. A small aluminum boat zips through the river churning up wake as it goes. Decked in colorful wetsuits, they're obviously headed for Kings Spring and some sort of diving or snorkeling.

Cirno continues to shout. "Slow down! If you're making a wake you're going too fast!" Finally getting the hint, the driver slows the boat to an idle speed and continues on course.

Disgustedly Cirno turns back to me. "People fly though here in search of manatees and then BUMP. Suddenly they're asking 'What was that?' People go right to Kings Spring thinking the manatees will all be waiting there like some petting zoo. They don't realize they're everywhere.

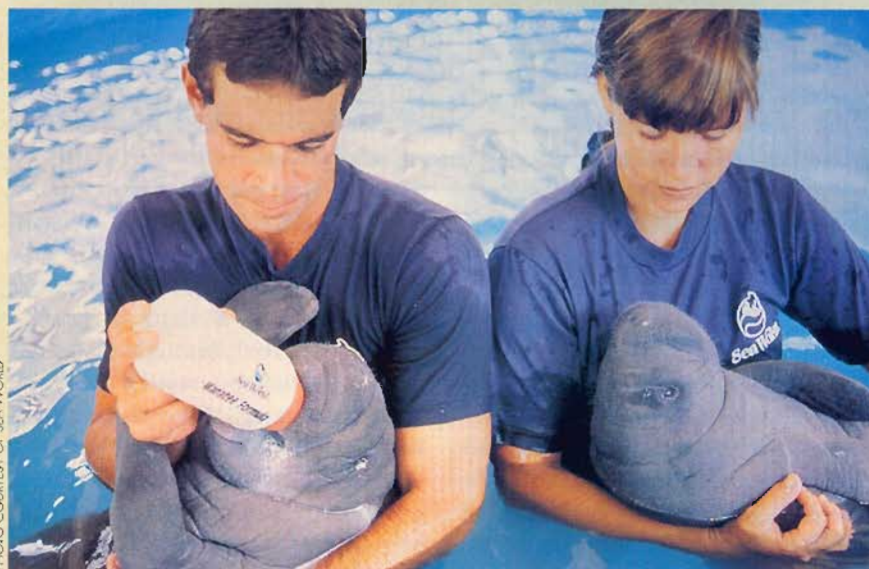
"There are other groups that rent boats and just send people out, but that's not what we do. That guy had no clue. He probably rented the boat and was told to go at idle speed, but he has no idea what that means."

ENCOUNTER OPPOSITION

It's situations like this which have some environmental groups and private citizens worried. The Florida-based Save The Manatee Club was formed in 1981 by singer Jimmy Buffet and then-Governor Bob Graham to help this endangered species survive.

Judith Vallee, executive director of the Club is especially concerned. "Crystal River National Wildlife Refuge is the largest natural winter refuge for the manatees," she explains. "If one person does an activity, that's fine. But Crystal River gets 100,000 visitors a year — 70,000 of them are divers.

"That puts tremendous pressure on the refuge. It's my feeling — and some residents mention it, too — that some activities such as open water certifications could be done elsewhere. When you have a large



Rescued orphan manatees receive round-the-clock attention. Initially tube fed, babies graduate to bottle feeding and are then weaned over a one- to two-year period.

Over the years, Sea World has rescued 123 manatees. Of those, 35 have been released and the potential exists to release another 14. And Walsh says three or four of those releases may occur in the next year. Overall, Sea World boasts a 35 to 40 percent success rate in helping manatees recover. That's good for any animal rehabilitation program. "If you have an 80 to 90 percent success rate, you're not dealing with the tough problems," explains Walsh.

You only need to hear the story of Fathom to know that Sea World doesn't avoid the "tough" problems. When this manatee was found, it was floating, unable to dive. An encounter with a boat

for people to understand and it's hard for the DEP to go against public opinion. There are always people who don't believe there is a problem."

Walsh hopes that the Sea World exhibit and rehabilitation program will help change public opinion. "Everyone's been wanting an exhibit," he says. "It wasn't added to get more people in. It was to built to show the ones already in the park what's going on.

"We have to influence the public here the same way we did with cetaceans. Millions of people have to see the manatees. To get them to give up boating or slow down in certain areas, we have to let them see the animals."



JOSE CANCINO

The closest modern relatives of the manatee are the elephants and small African and Asian mammals called hyraxes.

number of people in the same area with an endangered species, there's an increase in harassment.

"Many times you see a manatee swimming away and you see a diver following it. That can result in separation of a mother and calf. Also, people try to hug them." With a pained look she adds, "There have even been manatees found with initials carved into their backs."

Another of the group's worries is the loss of habitat caused by divers. As the diving population increased, many people believed the manatees would be driven out of the area. Actually, Vallee says that many times the exact opposite occurs. A large number of divers may frighten the manatees enough to keep them in their sanctuary zones, preventing them from leaving to feed. Not the problem people expected, but a problem nonetheless.

For these reasons, the Club advocates passive observation to minimize human impact. "I think most people would give [encounter programs] up if they knew their fun could be life threatening for the

manatee," says Vallee. "I'd like to get in the water and see one close-up, but I'm willing to give that up."

MANATEES IN COURT

The 33,000 members of the Save The Manatee Club aren't the only ones concerned. In October, the Audobon Society and others filed a lawsuit against the U.S. Fish and Wildlife Service claiming that they were allowing incompatible use of resources on wildlife refuges.

"The lawsuit was fairly broad," explains Pat Rose, administrator for the Office of Protected Species. "It said that Fish and Wildlife wasn't carrying out its charge to protect resources. In the case of Crystal River, the solution was to provide more protected areas."

According to Cirno, the sanctuary areas for manatees are now twice as big as in previous years. But Vallee still isn't sure its enough. "A couple of places that were set aside have no warm-water source. They're set aside for certain things such as feeding or warmth. We need to assess whether this will meet those

needs. Besides," she adds, "I've seen people go under the buoys."

All parties involved agree that enforcement is a major difficulty. There just aren't enough resources to effectively keep track of everyone and everything. "Enforcement is a tremendous problem," Vallee says. "It's hard to regulate with all those people there. You just can't get everyone who needs to be gotten."

One thing that has changed is Coast Guard participation. Cirno says that more of the "passenger-for-hire" laws are being enforced. People that rent boats to take groups out and encounter the manatees are being held increasingly responsible for their actions. According to Cirno, fines can range up to \$20,000.

The Audobon lawsuit has since been settled out of court. One of the conditions was that the CRNWR implement a public use management plan. As a result of this plan, several restrictions have been imposed.

A "swim only" access corridor was created. Divers and swimmers may only approach Kings Spring through this corridor. The remainder

of the area has been added to the Banana Island manatee sanctuary where all waterborne activity is prohibited between November 15 and March 31.

Night diving in the spring area has also been curtailed during the same time frame. From 7 p.m. to 7 a.m., use of all refuge waters, including the swim corridor and adjacent spring, is prohibited.

Rose says this looks like a lot of restrictions if viewed narrowly, but it's not the end of encounters. "Divers can still find manatees in dozens of places around Crystal River if they are patient and quiet. The water might not be as clear, but there will still be opportunities."

MEETING IN THE MIDDLE

Everyone concedes that the main cause of manatee mortality is boat-related. According to Dr. Dan Odell, research biologist at Sea World, probably half of all manatee deaths are human-related and a majority of that 50 percent is due to boating collisions.

Another result of the CRNWR management plan is that boating is restricted completely in the Banana Island waters from November 15 to March 31. But as Crystal River gains popularity, more divers will come and more boats will enter the water to carry them.

Manatee Information Sources

Bay Point Dive Center
300 N.W. Highway 19
Crystal River, FL 34428
(904) 563-1040

Sea Ventures
Marine Education Institute
P.O. Box 23931
Jacksonville, FL 32241
(904) 268-0956

Save The Manatee Club
500 N. Maitland Avenue
Maitland, FL 32751
(407) 539-0990

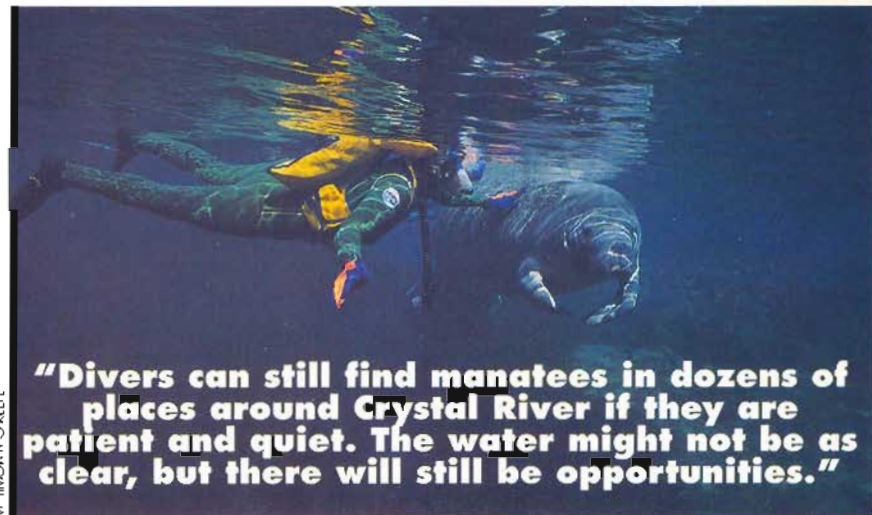
To emphasize the gravity of the situation, Vallee quotes a Florida Marine patrol statistic predicting that by the year 2000 there will be two million boats in Florida waterways. "How can the manatees hope to survive," she asks. But, just because boats are the main culprit, Vallee doesn't think that diving should be unrestricted.

"No one can say that John Smith going diving forced a manatee out of an area and caused it to die," she explains. "I think any interaction is

they need to do."

Cirno thinks his education program can be a part of the solution instead of part of the problem. "There's always going to be interaction between manatees and humans," he says. "There's nothing you can do to stop that. Up until the past few years, that impact has all been negative.

"If there is some negative impact to our program, it's far outweighed by the positive influence of so many people becoming concerned. I don't



causing problems. In the grand scheme of things, boats are still far and away the main problem. But, underlying the whole problem is loss of habitat and you have to include diving in that."

None of the parties involved pretend to have all the answers. In fact, everyone seems to want to save the endangered manatee. There is just disagreement on how far regulation should go. The Save The Manatee Club believes that some state and federal agencies and officials aren't willing to make unpopular decisions.

"Because the National Wildlife Refuge was established specifically for the protection of the manatee, that should be the priority," argues Vallee. "Anything else should be dealt with in a less prioritized way. If protecting the manatee means shutting the spring down, that's what they should do. If it's getting divers out of the water when it drops to a certain temperature, then that's what

feel we have a negative impact, though. People come here from all over the country and leave wanting to help the manatee."

Rose also isn't sure that stopping diver interaction with the manatees at Crystal River National Wildlife Refuge is the solution. "We encourage people to go to Crystal River National Wildlife Refuge," he says. "Divers can do more harm at other places where the manatees are at greater risk. In other areas, the manatees aren't used to divers and they can panic. In these other places, there are often severe water temperature differentials and more boating traffic."

It all comes down to responsibility and respect for the manatees. "Can divers adversely affect manatee behavior," Rose asks. "Yes. There are cases of disregard. These people mess it up for the responsible divers. Divers are the best friends the manatees can have, but it's important for the manatees to have a safe environment."