

**SARASOTA COUNTY WATER ATLAS
ORAL HISTORY PROJECT
NEW COLLEGE OF FLORIDA—FALL 2010**



Interviewee: Randall Wells

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Interviewer/Transcriber: Jenica Leahy

Subject of Interview:

Randall Wells and his involvement with Sarasota's dolphin research

Leahy: First off, can you introduce yourself?

Wells: My name is Randall Wells. I'm a senior conservation scientist with Mote Marine Laboratory. Actually, let me back up. I'm a senior conservation scientist with the Chicago Zoological Society and a senior scientist with Mote Marine Laboratory.

Leahy: Cool. So, what first sparked your curiosity about dolphins?

Wells: I've been interested in the ocean for as long as I can remember, from the time that I was in elementary school, but there was not a lot that you could do about that when you lived in Illinois. I was fortunate in that my family moved to Sarasota to Siesta Key when I was in high school, and I had the opportunity then to take classes in oceanography and marine biology at Riverview High School, and those were excellent and they stimulated a lot. They also brought me into contact with Mote Marine Laboratory. Between my junior and senior years, I was able to get a volunteer position with Mote Marine Laboratory when it was down on Siesta Key. My primary interest at that point had been in sharks. I read about sharks, I was familiar with the work that Eugenie Clark had done, I was familiar with the idea that Mote was the shark research center for the world, and very excited about the possibility of doing work down there. But when I volunteered first time around, I was told there weren't any opportunities. Following that, as circumstances worked out, a fellow who was moving to Sarasota to do shark and dolphin research in Mote Marine Laboratory was introduced to my father. My father arranged for me to

get an interview, and Blair Irvine, the scientist who was starting this O and R research for Mote, took me on as his volunteer for that summer. So, I got to study sharks, but I also go to study dolphins. We were interested in learning about how sharks and dolphins interact, and whether dolphins could be used to keep sharks away from a diver.

Leahy: So your first encounters with dolphins were via Mote Marine?

Wells: No. We'd see dolphins on Florida vacations that we'd had in the past, and I was interested in them, but sharks were really my passion at the time. But once we started working on the project to look at the interactions of sharks and dolphins in pools at Mote Marine, it became much more of an interest for me. It was during that same time that Blair Irvine started a tagging study in Sarasota Bay to look at the movement patterns of dolphins. We didn't know, no one knew at that point, whether bottlenose dolphins in coastal waters stayed in one place or roamed widely. So the tagging study that he initiated and that I helped him with when I was a senior at Riverview began to give us our first indications of population level movements of dolphins and actually population level residency of dolphins. Sarasota was the place where that was first defined for bottlenose dolphins in the world.

Leahy: So Mote was the first to discover a lot of these things.

Wells: Mote was. They were influential. The director of Mote at the time, Perry Gilbert, gave us time to go out and do this study. There wasn't any funding for it, he just gave us the time to go and put tags on dolphins and try to recite those animals, and the first indications we got were that the dolphins that we were tagging, even though the tags might not have been very good and came off, we were still able to recognize the individuals, and we began to learn that some of these dolphins were indeed resident to Sarasota Bay.

Leahy: Was it just through your volunteer work that you decided to make a career out of this?

Wells: My volunteer work lasted for the summer, and then I was hired on in the Fall, so I got to work half time in a work study situation through Riverview, and that pretty much clinched it. Being able to do this day in and day out, being able to be around the professionals at Mote Marine Laboratory and learn about many things beyond just the charts and the dolphins, was what really got me anchored in wanting to be involved in marine science for a career.

Leahy: Does Mote still have a lot of those volunteer opportunities for high school students?

Wells: Mote has even more volunteer opportunities than they did back then. When the lab was at the southern tip of Siesta Key, which was its second location—it was started in 1955 down at Cape Haze Marine lab, down near Placido. But it moved in 1960 to the southern end of Siesta Key and stayed there until 1978. When it was at the southern tip of Siesta Key, it was a pretty small place. There were only a couple of dozen of people working there and a few intern opportunities. I don't even think the word intern existed back then, but a few school opportunities. Now there are perhaps as many as a hundred college interns that work on research projects each summer and a number of high school research opportunities as well.

Leahy: That's really neat. Do a lot of the kids end up staying at Mote like you did?

Wells: I don't know about staying at Mote. There's still one fellow here who's the vice president of Mote who was an intern, started a couple of years after I did, but Mote does definitely serve as a training ground for people who go off and do other things. We track some of the interns that work with our program, and we have as many as twenty-five or thirty a year, depending on how many projects and how many grad students we have that need help. And we track some of these people as they move into academic positions at Universities, as they move into wildlife management positions with various governments, as they create their own research programs internationally. And it serves very much the same role as it did for me in terms of getting people inspired, getting them excited, and giving them the contacts that they need to be able to move forward in the field.

Leahy: Was it after you were hired with Mote that you went into an undergrad program?

Wells: Right. When I continued working part-time at Mote for the next several years on a variety of projects, even though the dolphin/shark project was over in 1971 or '72, I still continued with Mote, helping with Red Tide research project, helping with whatever needed to be done, which gave me a broad background in different marine techniques and allowed me to better understand the lives of the dolphins from an ecological perspective, how they fit into their environment. But I stayed with Mote for a period of time after that, and then in 1974 and '75, Blair Irvine got a grant from the Marine Mammal Commission to resume tagging in Sarasota Bay. And so this was through the University of Florida, and we began to tag dolphins once again in the Bay and began to appreciate the fact that some of the dolphins were individually identifiable from natural markings. But we also used radio transmitters on the dolphins so that we could track them day and night and learn something about their activity patterns. It was during this project that we re-identified eleven of the twelve dolphins we'd tagged in the area back in 1970 and '71. So the hints of residency we'd gotten early on were confirmed, and we're still seeing two of those animals from 1970 and '71 in 2010. So long term residency is really the pattern, and Sarasota was responsible for demonstrating that.

Leahy: So the Dolphin Research and Conservation Institute. Did you help develop that part of Mote?

Wells: The Dolphin Research and Conservation Institute is actually a program under the Chicago Zoological Society, and it covers the Sarasota Dolphin Research Program, which is our joint program with Mote Marine Laboratory and the Chicago Zoological Society and colleagues from around the world. But the Dolphin Research and Conservation Institute also covers international training programs in which we're engaged, educational programs that go beyond Sarasota, and that sort of things. It's a broader, broader set of activities than just what we do down here in Sarasota.

Leahy: So the early years with the dolphin research were mainly studying the tagging and the residency of the dolphins?

Wells: The early years were learning about residency and social patterns. We began to not only see the same dolphins repeatedly in the same general area, but in many cases we were seeing them with the same associates, maybe not every time, but on a repeated basis. So it gave us the first inkling of what the social structure of wild dolphins might be, wild bottlenose dolphins.

Leahy: You mentioned how you moved to Sarasota when you were in high school. Besides your relationship with Mote, do you have any idea what Sarasota's relationship was with marine life in general?

Wells: The area was a very different place before we moved here. There was a lot of dredge and fill activity that changed the nature of the Bay dramatically in the decades, especially the '40's, '50's, '60's, until a lot of that was curtailed in the '70's when people began to truly understand the importance of wetlands. And a lot of the understanding about the importance of marine life that came to be the realization of the people of Sarasota came from Mote Marine Laboratory and the fact that they had a world-renowned laboratory in their own town, and they began to hear about the discoveries coming out of Mote. So it was instrumental in getting people to understand what was going on here. There were other areas where marine restriction was going on as well. New College was an area that was also greatly involved in that. John Morrill and his program got the word out about the value of wetlands and about the value of mangroves. And in combination with both the academic and the scientific organizations, being able to share that information with the public, I think it made a difference in terms of people understanding what they needed to survive.

Leahy: I'm not familiar much with Sarasota's relationship with marine life, but was there any hunting of the dolphins?

Wells: There was. Not in the sense that I think you're thinking of, but the '50's, especially the '60's and early '70's, was a time when dolphinariums were opening up, all over the country, all over the world actually. And the way that people obtained dolphins for those places, it was through live capture. The first and the largest live capture fisheries for dolphins occurred down in the Florida Keys. Many of the people that worked down in that operation in the Keys then spread out and moved into their own areas for hunting the animals. Sarasota was one of those areas. There was a small dolphinarium called Florida Land that was established just south of Blackburn Bridge. It's now a subdivision. But back in the '60's and '70's there was a fellow there who was collecting dolphins for his own programs. He had dolphins in pools, he had dolphins that would go out and swim with the boat that he had for cruises out in the inter-coastal waterway, but he was also supplying dolphins around the world. When we started doing our tagging, it was actually taking advantage of what he was doing. He didn't keep all the dolphins that he caught. He selected the ones that he wanted. He allowed us to tag the ones that he didn't want, and that meant that he wasn't gonna keep capturing those same animals over and over again, and it gave us a basis of marked animals to be able to keep track of. We modified that process so that over time we started putting brands on the dolphins—freeze brands that are numbers that are applied to the skin and the pigment migrates out and leaves a number—and by having that number on them then meant that there was no commercial collector who would be interested in them. So we took it one step farther in the mid 70's when we started using our own net to catch the dolphins for research purposes and tried to mark the animals so that commercial collectors would not come to Sarasota to take the animals, because they would know that it wouldn't be worth their while because everybody would have marks on them. So we don't know exactly how many dolphins were taken out of Sarasota. Much of this occurred before the Marine Mammal Protection Act went into place in 1972 and before there was a good system for keeping tabs of those kinds of things. The estimates are that there might have been about sixty dolphins taken by collectors from Tampa Bay down to Charlotte Harbor and then other places around the

Southeast. All totaled, the estimates are that there were maybe a thousand dolphins collected in the Southeast U.S. during a several decade period to supply public display research and military needs.

Leahy: So you were just experiencing the tag end of that activity.

Wells: We were putting the tags on the animals for the research purposes.

Leahy: Can you describe what your fieldwork is like? Is it just tagging still or has it...

Wells: No, no. We've moved way beyond that sort of thing. We learned in the '70's that some of the animals have pretty distinctive markings that stayed with them for time. And following a research project out in Hawaii with spinner dolphins, where I worked with other scientists who were moving forward with using individual recognition patterns from natural markings, we began a concerted effort in Sarasota in the late '70's and especially starting in 1980 to use their natural markings. And what we found was about 60 to 80 percent of the local dolphins have markings that can be considered distinctive, like a fingerprint, if you have a high quality photograph of their dorsal fin. So that's the primary technique that we use now, and today one of the main things that we do year in and year out is monthly surveys, photographic identification surveys of the dolphins in Sarasota Bay. So for ten days each month, we have a team on the water photographing the local dolphins. This allows us to document their presence. It allows us to document their condition, to document the presence of their calves and how those calves are fairing and to see who's with whom and what kind of habitat they're using. So in that way, and expanding these kinds of surveys up and down the coast over time, we can now recognize more than 3,500 dolphins from the West Coast of Florida, from Charlotte Harbor, from Pine Island Sound, basically all the way up to St. Petersburg and offshore to within about five miles of the coast.

Leahy: So you know a lot of these dolphins by their markings, then?

Wells: We do. Some of them my staff can pick out very readily just by seeing them in the field, others are subtle markings and you have to go through our catalog. To completely go through the catalog of 3,500 fins, to look for an animal, takes about three and a half hours. And everything's digital, but you have to do it, the eye is much better than any computer programs, so you have to do it manually to really be able to be sure that you're not missing a fin. So, it's very, very time expensive. The work in Sarasota Bay is somewhat easier. We have a resident community of dolphins in Sarasota Bay that numbers about one hundred and sixty individuals and 96 percent of those are recognizable to us in part because they have these freeze bands on them that serve like medical bracelets basically, medical ID bracelets. So that if one of those dolphins, it's been through a health assessment that we perform from time to time in the Bay, strands, a stranding network will know that there is a medical history on that animal. They can contact us, and if it's a live stranded dolphin they can use those records to help diagnose the problem and treat the problem. If it's a dolphin that's died, they can use our records to try to interpret why the animal died.

Leahy: So is Sarasota's resident dolphin population, is a resident dolphin population normal for bottlenose dolphins?

Wells: That's what we've determined for the West Coast of Florida. And as others have looked in other places, they've found residency as well. But Sarasota is where it really got its start. So we have looked in Charlotte Harbor, Pine Island Sound, Tampa Bay along the coast line and found resident communities of animals. It's a mosaic of communities that are slightly overlapping. The animals are permanent residents to these areas, as near as we can tell, but it's not as if there's a wall that separates them from the next community. There's interactions about 14 to 17 percent of dolphin groups that we see are mixed with members of different communities, but most of the activities of a community occur within a definable geographical area. Most of their social associations occur with animals from within that area, but there is genetic exchange, and from paternity testing that we've done and genetic work that we've done over the years, we've been able to determine that there may be as much as 30 percent of the calves sired by males from outside of the community, and we assume that it works the other way as well. So that's why we refer to it as a community and not a population, which from a biological definition perspective suggests that it's a closed reproductive unit, but it's not. But these communities have very long term basis to them. We are currently observing dolphins that span five generations in Sarasota Bay, and as I mentioned earlier, including some of the dolphins that we first identified back in 1970 and 1971. We have dolphins, we have one dolphin that is sixty years old in Sarasota Bay, a female that's 60 years old. We had a male that reached 50, we haven't seen him this year, but there's another male that was one of those two that we first tagged back in 1970 and '71 that is 47 years old. So these are long-term communities, multi-generational communities, multi-decadal communities, showing great stability. We haven't done the work, or others have not done the work for as long a period of time in other places along the coastline of the US and elsewhere, but the indications are that there are other places with similar residency. There's also variation. If you go up to the Florida Panhandle for example in St. Joe Bay, where one of our grad students did his Masters work, there is a core set of resident dolphins, but seasonally there's also an influx and an efflux of dolphins from that area, so it's not one size fits all. There's variability in how these dolphins live in different places.

Leahy: The 60- and 50-year-old dolphins, are they at the limit of usual age?

Wells: Each year they add on. They add one number to the limit that we know of. So, it's, there are probably older dolphins in other populations, but people just haven't looked at their ages to know that, but they're pushing the upper limits, I'm sure. Most of the males don't make it into their 40's or beyond their 40's. Most of the females, well we have quite a number that make it into their 50's, but probably not to sixty.

Leahy: I noticed in the pamphlet—

Wells: The newsletter?

Leahy: Yeah. There we go. The newsletter you gave me that some of them actually have names and then some of them just have numbers.

Wells: Yeah. And it depends. If they do something that inspires us to a particular name, they get that name. Nicklo, our oldest dolphin, has a low nick on her dorsal fin. Seems pretty obvious. Doctor Strangenotch is missing the tip of her fin with a strange little notch in the top of it. So it's however, whatever, inspires us at any given time. In the early stages of the project, we were

warned against giving names to dolphins because at that time, dolphins were not considered serious scientific subjects because of things like *Flipper* and all of that sort of thing. There was some research that had less than ideal credibility that was getting a lot of publicity back then and so, in order to strengthen the fact that this was science that we were doing, we were warned not to give the animals names, but to give them numbers. Over the years, that's gone away, and so some of them the numbers mean names to us, they, we, use them the same way, but some have kept their numbers, some have acquired names. Trying to find accurate descriptive names for thirty-five hundred individuals is a challenge, so we let the staff have parties and come up with names sometimes.

Leahy: That's fun. What was some of that research that was less credible that was going on?

Wells: I'd rather not go into that side of it.

Leahy: Ok. That's fine. Is there anything besides the residency of Sarasota's dolphin population that is unique about their population?

Wells: Well, this is the place where we really began understanding dolphin societies, and understanding how these animals live within a community is important to be able to conserve them appropriately, knowing what kinds of units are there and how they function is really important. What we discovered in terms of the social structure of the animals is that there are three basic kinds of groups. None of the groupings are permanent. They live in what's called a fission/fusion kind of society. It's a fluid kind of society where group membership is changing frequently. The dolphins are moving through the Bay. We view it kind of like a kaleidoscope where if you turn things, you get different patterns as time goes on. They move through the Bay; they encounter other dolphins; they may spend some time with those dolphins; they may mix and match, and separate out in different groupings at the end of that. But there are three basic kinds of groupings that make up the social structure. The largest groupings are the nursery groups and these are the mothers with their most recent offspring. And usually what guides what females will be swimming together is the age of their calves. So if they have to be nursing their calves, they have to take out time to nurse them. They also have to spend a lot more time catching fish in order to make the milk they're gonna pass onto their calves. And so there's kind of a sorting mechanism where those females that have similar demands placed upon them tend to swim together.

The other kinds of groups that we have are juvenile groups. The mothers and the calves stay together for three to six years, but after the calf leaves mom, it'll go off, sometimes on its own for a little while, but then it will get in with other juveniles. It'll be both males and females, and it'll interact with those animals for the next few years. For females, it's only for a couple of years, for males it'll be longer. The males mature at a later age than the females do. The females will mature between five and ten years of age and then start producing calves and then they go back into nursery group mode. The males, once they reach sexual maturity at about ten years of age, most of them will form a pair bond with another male. This is something that is very unusual in the animal kingdom, it's something that was discovered first here in Sarasota, and then it's been described elsewhere for dolphins. But these pair bonds will form up and once it forms, the males will stay together until one dies. And we suspect that these pair bonds are formed for a variety of reasons, but the one factor that keeps them intact is that males in a pair

bond are more successful in siring offspring than males that are on their own. And our paternity testing with Debbie Duffield from Portland State University has demonstrated that we do see higher reproductive success for paired males than for unpaired males. But there are other advantages for working in a pair. These dolphins don't go into a deep sleep. They don't go down and lie on the seabed and take a nap. They have to stay conscious and breathe, but they do lower their activity states. And so if you were at a lower level of vigilance, you are more vulnerable to attack by other dolphins or by sharks. Being in a pair bond means that you've got a buddy, and if you alternate watches, one can rest safely while the other one is alert. So there may be an advantage there for protection from predators and [unintelligible]... specifics. They can also work together to capture prey. And while most of the time the bottlenose dolphins in this area will capture prey on their own, there are times where having another dolphin to help herd the fish around can be very helpful and increase your success in getting your prey fish. It can also be helpful in maintaining access to females. It's not that the males are out there actively coercing the females. That is done by a different species of bottlenose dolphin over in Australia, for example, where there's very complex interactions between male alliances to capture females. But we believe what's going on in Sarasota is mate guarding where a pair of males will remain with a receptive female while she's receptive and then be able to ward off other suitors should they come into the area, but not so much coerce the female. Our males are better behaved than some of those in Australia it seems.

Leahy: I had a question... Okay. I'll move on. Has the [2010 *Deepwater Horizon*] oil spill affected Sarasota's dolphin population at all?

Wells: We have a project underway to try to evaluate the impacts of the oil spill. We have several projects actually, but one in Sarasota Bay. The Morris Animal Foundation supported work to look in Sarasota Bay and in the Gulf waters immediately offshore. The kinds of things we're looking for are changes in contaminant loads in the animals. These are, since the oil slick did not make it to Sarasota, we don't know what the distribution is going to be of some of the chemicals that are breakdown products of the oil, or the dispersants. And so we're looking at tissue samples of the dolphins and looking at chemicals in those tissues. We're also monitoring the population of dolphins in the Gulf waters and in Sarasota Bay to see if there's any change in the numbers of dolphins or how they're using the habitat out there. There was a hypothesis put forward that the oil spill might make dolphins move out of the area of the Northern Gulf and in the forefront of that wave of oil spill, the dolphins might move into other areas, so we might have expected to see an increase in the number of dolphins using the waters just offshore of Sarasota or have new dolphins appear. So far we have not seen that. In fact, what we've done with our reinvigorated surveys in the Gulf waters where we haven't spent a lot of time in recent years, we're actually finding a lot of our old friends in the waters just offshore in the waters of Sarasota. Residency occurs even in the open Gulf waters, just like it does in Sarasota Bay, but it's a different community of animals out there.

Leahy: So you're studying the residency in the open Gulf as well?

Wells: We do. We haven't done it to the same extent. We've had a couple of Masters students' projects that occurred out there with photo ID and genetic sampling that demonstrated the existence of different genetic patterns out there than what we see in Sarasota Bay. There's truly not just the ranging pattern and social association differences, but there's also genetic differences

between those animals that spend most of their time in the Gulf and those that are mostly in Sarasota Bay. It's the pool of dolphins that created the one's that led to the resident populations in Sarasota Bay, presumably thousands of years ago, although nobody was here to document it.

Leahy: So your division of the Sarasota Dolphin Research deals with the residency, so you don't so much deal with the rescues, and...?

Wells: Right. Mote Marine Laboratory operates their stranding investigations program and their dolphin hospital. We work closely with them; in fact I was the one who set up the dolphin hospital for them. And we work very closely with them now. When there are reports of injured or sick dolphins or stranded dolphins on the beach, oftentimes we have boats on the water and we investigate those for the Mote people if we can get there quicker than they can, and we help with the rescue of the animals, help to bring them back to lab, we'll bring the carcasses back for necropsy, and we help them with the necropsy if it's an animal that's of interest to it. But 16 percent of the dolphins that are recovered by Mote's stranding investigations program working from Manatee, Sarasota, and Charlotte counties primarily, 16 percent of those are dolphins that are known to us. And so those of course are a great deal of interest to us for following through. We observe the dolphins from the time they're born, oftentimes until the time that they die. And we're very interested in what brings about their death. Conservation is an incredibly important aspect of our research program, and being able to put mortalities into perspective, knowing what mortalities are natural, what mortalities and caused by man is really important, because that focuses our efforts on how to mitigate those that are brought about by man. And so Mote's necropsy program is superb. They have a wonderful team. They do a great job. And they provide that kind of information that really informs conservation.

Leahy: When was the hospital started?

Wells: The first, well, the first time we ever had a rehab patient was back in 1973. And that was when we were still down on Siesta Key. We had a live dolphin that came in. It was an old dolphin that was not in very good shape and we treated for about a week and then lost it, unfortunately. It wasn't until the 1980's that Mote began to recover live stranded animals again. But at that point, it was a triage operation. They didn't have the facilities to do full rehab here, so they would stabilize them and then transport them to the other organizations that did have those resources, whether it be Marineland or Sea World or Seaquarium on the East Coast. Then in the early 90's, those organizations stopped taking in rehab animals. There was concern about spread of disease from stranded dolphins to their dolphin collections that are their livelihood, and so they stopped their rehab programs. At that point, we also were in a position, I'd just recently moved back to Sarasota from Chicago and the West Coast, and so we had a year round presence of me and my wife at the time, who was a long time dolphin trainer and a vet tech that had worked with our stranding program at the University of California Santa Cruz. So we brought the expertise that was needed to actually start to do rehab at Mote. So in 1992, we got our first patient and kept it here at Mote. It was a dolphin that had been entangled in a crab trap buoy line down in Matlacha, down near Pine Island. And we brought him back to health. We released him back where he came from and monitored him for the next couple of years, and he was doing fine once he was back out in the wild.

The next year, another dolphin stranded up in the Manatee River named Freeway, and he came to

Mote. He was treated for over a hundred days, put back out in the wild, and we were able to monitor him in Manatee River in Tampa Bay for about six months, and he was doing great once he was back there. Based on the success of those cases and based on the fact that the big boys on the East Coast were no longer taking rehab cases, the director here, Kumar Mahadevan, agreed to establish a rehab program, and that led to the construction of buildings that housed the dolphin hospital, turtle hospital now, and the pools that are crucial to being able to take care of these animals. And that was completed in '94, I guess, that we had that facility up and running, and Mote has been a major player in cetacean rehab since that time.

Leahy: This kind of goes back to the dolphinariums you were talking about, but how do you feel about places like Sea World and Discovery Cove?

Wells: I guess I'd rather not get into personal opinion on things like that. There are people for whom those kinds of operations make a tremendous positive difference in terms of increasing their appreciation of the animals, and there are certainly detractors for those kinds of operations as well. There are places where people will not have any other opportunity to be exposed to the live animals, and that connection is what it takes sometimes. All of the people in the U.S., for example, all of the people that are voting age have an opportunity to say something about environmental regulations through the people that they choose. Getting these few people to better appreciate the natural environment and the creatures that are in it can be important. And so in places in the Midwest, for example, where dolphins are maintained and exhibited where millions of people can see them that wouldn't otherwise have the experience and might not get excited about helping the environment, they probably can make a big difference for their brethren that are out in the wild.

Leahy: That's true. How do you feel to be able to interact with these creatures on such a regular basis?

Wells: I feel like I'm one of the most fortunate people on the face of the earth. Just being able to have a good excuse to be around the water is good enough, but having these large mammals living in our backyard, these fascinating animals, is just incredible, and learning that they have lives going on that are parallel to our own in the same neighborhoods. I live on Siesta Key, and I can kayak out behind my house and find dolphins that we've known for decades. And they're going about their lives just like I'm going about mine. But it's a lot more challenging for them, I would think. They've had to face a lot of changes to their habitat over the years. The population of the area has tripled since I moved here in 1969, and there's been a lot of changes to the habitat, and yet these dolphins are still here. So it's pretty amazing what they've been able to do and how they've been able to maintain themselves. Their population has had ups and downs over that time, and there are a number of things that they've had to face that are natural as well as human caused things that have taken their toll. There are a lot of things that have taken their toll on these animals over the years, and yet they persevere. It's not that they packed up and left when the going got bad. That can be good and that can be bad. One of the things that we're exploring now is the possibility that these animals live in something we're calling an ecological cul-de-sac, meaning that they, for whatever reason, they either do not or cannot move in the face of large scale environmental change. For example, we've had severe red tides here. There was a horrible one back in the early '70's that I lived through. It was matched by the one in 2005. The toxins from the red tide can kill dolphins. Fortunately in 2005, not too many of the local resident

dolphins did die from that. It kills fish by the millions. It kills sea birds, turtles, manatees, and it irritates humans. And yet the long-term resident dolphins of Sarasota Bay stayed here through all of that. We've been operating a study to look at the distribution and abundance of fish in Sarasota Bay since 2004, something that hasn't been done before in a quantitative way, but we do purse seining on a seasonal basis that tells us and gives us a relative indication of how many fish are here. And we'd started this the year before the red tide in 2005 happened, so we had a base line year. And then we had the red tide and then we've been continuing it since then, so we were able to first of all document the fact that these dolphins stayed around even though more than ninety percent of some of their primary prey species were lost from the red tide. And yet they stayed here. Their body condition declined. The youngsters, the vulnerable ones that were switching from a milk to a food diet, died at higher numbers than they should have. They were 20 percent below the weight they should have been at. They were definitely feeling the impacts of it. But they stayed. They started taking fishing gear, ingesting lures and hooks, baited hooks, and taking catch to an extent that had never been viewed before because they didn't have enough food around. But they stayed. So these animals for whatever reason are very much locked into their particular community home ranges. Hurricane Charlie passed through in Charlotte Harbor back in 2004, I think it was, and we had done photographic identification studies down there headed by Kim Hull, one of our research associates, and the work that she did as follow-up demonstrated that 94 percent of the dolphins that had been there before the hurricane and the associated red tide during the same time period were still there afterwards. These animals are tied in, so what happens with things like global climate change? As the waters get warmer, if these animals aren't gonna move, what's gonna happen as they face warmer and warmer waters? And that's an area of great concern to us right now because we already see hints that these animals may be impacted by warm water to a greater extent than cold water.

Leahy: Would there be any way with climate change or another natural disaster to be able to relocate the dolphins?

Wells: That issue came up during the oil spill and then the question that needs to be asked is, even if you had a way to capture all of them, and no such way exists, but even if you had a way to do that, how would you decide where to put 'em? If we're dealing with these communities that have been established for many, many decades and many generations and presumably hundreds of thousands of years, they've become established because the resources of those areas can support them, and no more. So putting another dolphin population where one already exists would then lead to the demise of two dolphin populations because there wouldn't be enough to support them. So it's not realistic to think that you can really put them somewhere else effectively, and it's a problem, it's frustrating. We wish that there was something that you could do, but climate change is going to impact not just the dolphins in the Sarasota community, but the other thousands of dolphin throughout the Gulf of Mexico and elsewhere. So our approach to this has been to obviously encourage people to deal with climate change in ways that are productive, but more directly, try to better understand what impacts the dolphins. Give the animals as much capacity to adapt as possible. If they're not gonna leave in the face of climate change, then they need to be able to adapt. And if they already are facing natural mortalities, and those, they're going to become subject to additional illness or other issues with climate change, what can be done to give them more capacity? And that is reducing what humans do to them already. So clearly identifying the mortalities or the serious injuries that are caused by humans and then entering into programs that will reduce those, take away those additional sources of

losses, is one way that we can hopefully buy them some time to adapt. The species has been around for millions and millions of years and has been through changes in climate over time, whether it's anything what they're facing now, whether it ever came upon them as quickly as the one that is now occurring happened, we can't say, but, but still we can take humans out of the equation in ways that are possible.

Leahy: Do any of these dolphins, are any of them able to recognize you after various encounters?

Wells: Dolphins are very intelligent, obviously. That's part of the fascination, that's part of the wonder of having them living out here. We don't have to believe that they're humans in wetsuits to be able to appreciate them. We don't have to give them mystical powers or anything like that. They're just really neat animals the way they are. They're adapted to living in an environment that's very foreign compared to what we would be able to survive in. And they do quite well in it most of the time. They are able to do an awful lot with the sensory systems that they have. Their vision is good. Their hearing is much, much better than anything we can use. And we suspect that they're able to differentiate us from others out there. Certainly in captive situations, they can tell trainers apart, and they deal with them differently. We can tell that they recognize different boat engines and respond differently to different kinds of boats. The approach that we use when we are in our research vessels is different from what most boaters do. Most boaters racing through the Bay are doing just that, they don't even, they're oblivious to the fact that dolphins are there. They don't know they're there. But we're specifically looking for them, or anything else in the water, and so our approach is very different. We slow down, we parallel them, we collect our data, and then we move on. We suspect they recognize that approach. We suspect they can differentiate the sounds of our boat engines as well. These animals are subjected to the presence of humans very, very frequently. A Master's student of mine, Stephanie Nowacek, determined that every dolphin in Sarasota Bay is exposed to a power boat passing within a hundred yards once every six minutes. That's an awful lot of human exposure, and an awful lot of noise. And these dolphins respond to that. They change their behavior, they change their grouping patterns, they change their dive patterns, they change their communication patterns as boats get close to them. We don't yet know what the cumulative impacts are of doing that every day, day in and day out over long periods of time. It would not be unreasonable to assume that these animals have energetic costs for doing that. Those energetic costs may lead to stresses that may impact their reproduction or their health and effect their long-term survival. But trying to make all those linkages is a very difficult thing to do. But they have to know how to deal with boats and they have to be able to evaluate the threats from various boats, and so we believe they, they're reasonably able to tell the difference between our boat and between other boats that are approaching. They go about their lives when we're present whereas they dive and go away when other boats are racing over the top of them.

Leahy: That's interesting. So they know to avoid these boats.

Wells: And they do avoid them reasonably well, except when they can't. About four or five percent of the dolphins in Sarasota Bay have scars from having been struck by boats. That's a lot less than manatees, where about 70 percent, I believe, have boat scars and 70 percent of those have, of those 70 percent, have scars from multiple boat strikes. But for the dolphins, it's about four or five percent. And typically it's dolphins that are more vulnerable. All the collisions that

we've been able to document have happened within a two-week window surrounding the Fourth of July. That's a very heavy boat traffic area, a boat traffic time of year. It's the time of year when there's a very large boat race that occurs here every single year. And it draws thousands of spectator boats onto the water. It also is a time when the females have just given birth. May, June especially, and July are when the dolphins have their babies, and so we see a lot of mothers with very naïve offspring out there at a time when there are all these boats racing around the Bay. And that's when we see most of the collisions occurring.

Leahy: I don't know who's in charge of the boat race, but are they aware of that?

Wells: They've been made aware of it from the very start. It's not probably the boat race itself, the race boats that are causing the problem, but it's the thousands of spectator boats that are out there. And the dolphins just get overwhelmed.

Leahy: Outside the realm of your research, have you learned anything from your interactions with dolphins?

Wells: I've learned to appreciate just what they have to go through to be able to carry on with their lives out there. I've learned that they are individuals, definitely individuals. Some people talk about "dolphinalities" as opposed to personalities, and they do have their different ways of dealing with things. There are some that use particular parts of the habitat, like one lineage of animals is especially found in sea grass meadows and moving through very shallow waters. Others hang around bridges. Others use specific feeding patterns in different ways, and they pass those on from generation to generation, through cultural transmission of knowledge. There's a lot going on in those dolphin heads. It's more than just gray bodies surfacing when you go by or the occasional dolphin leaping off in the distance. But there's a lot that goes on to make up their day that we never even knew about that just helps me to appreciate what else goes on in the world in general. We like to think that what's going on in our particular life on any given day is the most important thing that's happening, but you look at the other people driving past you on your way to work, and they're going on to do different things. You look out on the Bay and you see the dolphins. They've got a full day ahead of them as well, just trying to survive, and humans have made that, just trying to survive, that much more difficult with things they've inflicted upon them over the years.

Leahy: You've mentioned that Sarasota's knowledge about the dolphin population conservation has improved over the years. But do you think there are still some things Sarasota should know about its dolphin population?

Wells: Oh, absolutely. These animals are well known, but that doesn't mean that they are free of any kind of threats from humans. In fact, one of the ways that Sarasota serves as a model is by allowing us to get a handle on some of these threats to the animals before they get widespread in other places, and then we can work with the Federal Wildlife Regulating Agencies such as the National Marine Fisheries Service to try to come up with programs to mitigate some of these problems. For example, human feeding of wild dolphins is an increasing issue throughout the Southeastern U.S., but it's in Sarasota Bay where we've been able to do some of the first quantitative studies of that, and understand what kinds of things can help bring about a positive change. There is one dolphin in Southern Sarasota Bay named Beggar who's been around since

1990, and he got his name for good reason. And we've been able to monitor him over time, we've tried various ways of dealing with his behavior to see whether or not we can reduce the interactions with people, and what we found was that by being out there and talking to people, well, first of all, signs were posted. Feeding wild dolphins is illegal under the Marine Mammal Protection act, so the National Marine Fisheries Service posted signs in the area where Beggar spends his time and where other dolphins learn to beg from watching Beggar. Signs were effective at reducing the number of people interacting with him, but they didn't stop it. We then tried a program where we actually shadowed Beggar, and any boat that came over to try to interact with him in an illegal way, we talked to and explained it to them, and about half of the people that we talked to said they didn't know that there was a problem with doing that. And the other half said they didn't care and they were going to do it anyway. We've reduced the problem further by developing a card, a little laminated three by five card, that has ten tips to how you can have a good day on the water, whether you are boating or fishing, and minimize your impact on the dolphins. We distributed that in the region where Beggar is, and we found a 30 percent decline in the number of people that were interacting with Beggar after that went into effect. But being able to identify these problems exist, being able to document, with the help of the stranding program, that dolphins started coming in after the severe red tide with fishing gear in their throats. These are the kinds of things that queue us into problems and allow the National Marine Fisheries Service to know what's going on in a timely way so that they can then put programs in place that can make the public more aware of the issues and what they can do to remedy the problems.

Leahy: Is it illegal to interact with the dolphins without feeding them?

Wells: The guidelines that are out there suggest that you stay at least fifty yards away if you're in a boat and you don't swim with them. That's considered harassment under the Marine Mammal Protection Act.

Leahy: I knew that was true about manatees, but I didn't know about dolphins.

Wells: Yeah. It's somewhat different because manatees are an endangered species and bottlenose dolphins are not, but the same basic concept is there.

Leahy: This is just my curiosity, I've heard that if manatees approach you, you can't reach out and touch them, but if they come up and touch you, of course...

Wells: Not much you can do, right, you just...

Leahy: But do you avoid them or do you...

Wells: No, again you don't want to do much to disrupt their behavior, so if they come up to you, there's probably not much that you can do. But it's, it's where you have the ability to approach them and you do that, that puts you in the wrong.

Leahy: Dolphins, I guess, in particular aren't really afraid of humans after all these interactions, it seems, so that seems more...

Wells: It depends. They won't, in some parts of the world there are some groups of dolphins that

will seek out people. Mostly that's in situations where they've been rewarded with food for doing that. Around here, they don't interact a lot with swimmers along the Gulf beaches or that sort of thing. They'll just go about their business typically.

Leahy: I think that about covers it, unless there's something else you want to add.

Wells: I think just from the long-term perspective, one of the things that we've learned is that this really is home for these dolphins. The Water Atlas defines the aquatic environment for the people who live around Sarasota or visit Sarasota. It also defines the water environment for other creatures that call this home, and if there's one thing that the Sarasota Research Program has been responsible for in terms of dolphin work, it's defining what is home for a dolphin. And the fact that we see these dolphins here across multiple decades, across multiple generations of related individuals, through thick and thin, it truly is their home. When we go out on the water, some of us are out there making our livelihood doing that, but most of the people that are out there are out there for recreational purposes, to enjoy what brought them here in the first place. And that's all good and fine, but we need to recognize the fact that we are visitors to the dolphins' home. They have no other place to go, and they don't have the ability to go any other place. And so we need to respect it as their home and serve as good stewards of their home, and that will in turn reap benefits for us as well. The dolphins can be viewed as a wonderful feature of the local environment that we can appreciate as something really cool going on in our backyard. They can also be appreciated as sentinels for health issues. These dolphins are breathing the same air, swimming through the same water, and eating the same fish that we're catching in local waters. If there are problems with pollution or bio toxins or other kinds of issues, they're on the front lines because they do it so much more than we do, they're the ones that are going to be effected first, and they'll give us a hint about what's going on out in the environment. It's just one more reason to appreciate them and do what we can to try to make sure that it's a good home for them out there.

Leahy: I was reminded of a question while you were talking. What, besides natural disasters and red tide and things, what is one of the biggest problems that the population of Sarasota brought to the dolphins?

Wells: Well a lot of it has to do with the boat traffic that we talked about and recreational fishing pressure. These animals are interacting more with anglers than they used to. A lot of that was stimulated by the red tide when the best looking fish in the Bay of the species they were used to eating were on the end of a hook, and so breaking them of that association with fishing boats or piers is really difficult. They get rewarded when people come up to them; they get the discarded fish, which the anglers legally have to discard over the side. They're not allowed to keep some of the size, classes, or some of the species of fish, but the dolphins view that as a reward for approaching the fishing boat, and it's a really challenging problem to create a separation, to reduce the risk to the dolphins for being around the anglers, to increase, improve, the fishing experience for the anglers by not having the dolphins interfering with it. And that's, that's one of the biggest sources of issues that we have here, now, and along much of the coast of Florida. It's gonna take patience on the part of the anglers and working with scientists and others to try to come up with solutions that can work to the benefit of everyone and allow us to continue to enjoy being out there on the water and allow the dolphins a chance to survive.

Leahy: I think that's it.

Wells: Okay.

Leahy: Thank you very much.

Wells: You're quite welcome.