

TRANSCRIPT

INTERVIEWEE: Tom Stehn

INTERVIEWER: David Todd

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Google Voice [00:00:00] This call is now being recorded.

David Todd [00:00:04] Good morning, this is David Todd. Is this Tom?

Tom Stehn [00:00:11] Yes, it is. David?

David Todd [00:00:12] Oh, good. Yes.

Tom Stehn [00:00:14] Good morning.

David Todd [00:00:16] Good morning to you. Thank you for calling.

Tom Stehn [00:00:20] You bet I. I don't know if you're a morning person or not, so this might feel early to you, but that's, I guess that's the way I wanted it.

David Todd [00:00:28] Yeah. No, no, this is, this is good. I've had my coffee. I'm good. I'm as awake as I'll be all day long.

Tom Stehn [00:00:37] OK. Yes. I got my second cup in front of me. So let's take a second and take a sip every once in a while.

David Todd [00:00:46] Okay. Well, well, good. I just wanted to, before we got into this, I wanted to thank you both for what you've done at the refuge and for the cranes over the years and also for taking some time today to talk about it. I hope you know how appreciated it is.

Tom Stehn [00:01:07] Great. Yeah. Yeah, I know. I have mixed feelings about, about this interview, just because I've kind of tried to leave my crane work behind, as far as, you know, not really staying involved in stuff. So it's kind of hard to jump back in.

David Todd [00:01:29] Sure. But I am betting on it. And this is a superficial kind of tour through, you know, years and years of work. And I understand that we can't.

Tom Stehn [00:01:41] I love talking about the cranes. What I what I found is when I retired, there were various, you know, things that came up. And I, I quickly, I did a few of them and I quickly realized I just, I just was ready to retire. And I just didn't, I wasn't one of those people that was going to continue on, kind of, you know, maybe doing what they used to be doing as a volunteer or something like that. I just, it wasn't me. So I think of myself as the poster child of retirement. I just absolutely love retirement. It's, it's just a wonderful time of your life, if, if your health is good and.

David Todd [00:02:21] Windsurfing sounds like a possibility. Yeah?

Tom Stehn [00:02:25] I windsurf about, nearly a 100 days a year. So I'm pretty. I've doing that. Right. Let me get, let me get to that. This is my thirty-first year of windsurfing. I started when I was age 39. My wife bought me a windsurfer for my birthday and I've just absolutely loved it ever since. Two days ago, I was windsurfing and I had a dolphin swimming in front of me staying at the exact same speed. And it came up twice, about 30 feet in front of me. And then the third time it came up, it was like four feet to my side. I could have jumped on its back if I'd had, if I'd had time. But when you see things like that, it's just, it's just an incredible sport to be out there on the water. Great exercise.

David Todd [00:03:17] Yeah, really in the thick of it. Well, this is going to be pretty academic compared to, you know, riding the waves and the wind. But let me, let me explain what, what our goal is here, at least on our side, and hope that it's something that you might agree to. And so with this introduction, let me just sort of lay out what, what I had in mind. With your approval, what we're hoping to do is to record this interview for research and educational work on behalf of a nonprofit group called the Conservation History Association of Texas. And the product would be used for a book and a website for Texas A&M University Press. And for depositing with an archive, the Briscoe Center for American History, which is over at the University of Texas here in Austin. And you would have all equal rights to use the recording. So, that's, that's the thought. And I wanted to make sure that's acceptable to you.

Tom Stehn [00:04:24] Yes, that's fine. You have my full permission for that.

David Todd [00:04:28] OK, well, thank you. Well, let me lay out a little bit about when it is, what we're about, where it is.

David Todd [00:04:38] It is October 16th, 2020. My name is David Todd. I am in Austin and I'm representing the Conservation History Association of Texas. And we are conducting an interview with Tom Stehn, whose work as a biologist for the U.S. Fish and Wildlife Service, studying and protecting whooping cranes and other wildlife at the Aransas National Wildlife Refuge and I believe he is based in Aransas Pass. And this interview is being done by telephone.

David Todd [00:05:11] And today, I think we're going to try to learn from him about his understanding and experience with the whooping cranes and and the wildlife and habitat that they're a part of - the blue crabs, wolfberries, water inflows and the lands of the refuge. So with that, I was hoping to launch with my first question, which is of a context, background question. I was wondering how you first might have gotten interested in wildlife and in conservation.

Tom Stehn [00:05:47] My, my dad was a nuclear physicist. But as he got older, he got very involved with the environment and, you know, feeding the birds and watching the birds at his feeder at the house. And it was kind of in the early 70s going to school, it was kind of the era of Earth Day and and the start really of ecology. And so I just pursued a master's in wildlife biology. Ended up at the University of Montana, got my degree, and then went to work for the State of Iowa and some counties in Iowa. Did, did radio-tracking of deer and turkeys and went on from Iowa and went on to the Peace Corps in southern Africa, a country called Swaziland. And I helped, I helped set up the first national park in Swaziland, and I'm proud of that because that national park is still there, thirty some years later. So that's good.

Tom Stehn [00:06:53] And then after Peace Corps, you're allowed eligibility to apply for federal jobs. And with my education and experience, I got on with the U.S. Fish and Wildlife Service. And I was the second employee hired at the brand new McFaddin Marsh National Wildlife Refuge, which is on the upper Texas coast near Sea Rim State Park and Sabine Pass. And so I worked there two and a half years and did a lot of law enforcement work and run a duck hunting program.

Tom Stehn [00:07:29] And after two and a half years there, I had a chance to transfer down to, to Aransas National Wildlife Refuge. And it was just, there's such diversity at Aransas. I mean, you've got the, the marshes, you've got endangered species, you've got a big deer herd and all kinds of birds. So it was just, it was just fascinating - an opportunity to work at Aransas. And then I just stayed and stayed and stayed. My wife is a, a family practice physician with her own practice. And once she got her, you know, patients, they didn't want her to leave and she didn't want to leave. So I just stayed where I was. And I just, you know, which is very different from most biologists with Fish and Wildlife. Most, most of them transfer every two to three years. And that's the, what that's what Fish and Wildlife wanted. So I did a little different and it worked out great. And you develop an expertise, which I think is very important. I think it's really important not to be transferring every two to three years.

David Todd [00:08:38] Let's see if I've got this right. You arrived at Aransas in 1982. Is that correct?

Tom Stehn [00:08:47] Right. I. Yeah. The the whooping cranes were about to arrive for the winter and the previous biologist transferred down to Laguna Atascosa, and they needed they needed somebody in a hurry to do the flights and count the cranes as they came in. So I did a, I did it as fast as the government can do it. It's a, it's a six-week transfer process. And, yeah, it's not a competitive promotion or anything like that. You just go from one refuge to another.

Tom Stehn [00:09:22] And then all of a sudden there I was. You know, I kind of ironic, I guess it was about this time of year, actually, September / October and kind of ironic, we're doing the interview today, October 16th, because this is always the day that I that, on average, the first whooping crane will arrive at Aransas National Wildlife Refuge. And I can always remember that because it's my, my youngest son's birthday. And I remember one year missing the arrival of the cranes because I was at the hospital.

David Todd [00:10:01] I think you get a good alibi. Well, we'll tell us about about the refuge and maybe some of your tasks there.

Tom Stehn [00:10:15] Well, for the first roughly six years, I was the refuge biologist and you, you do a lot of survey work, whatever happens to come up. We were doing, counting the deer herd and all kinds of projects, did a, ran the Christmas bird count. And it was very, a lot of varied work and really a lot of fun.

Tom Stehn [00:10:46] And then after fifteen years, I, I was promoted to become the national whooping crane coordinator for the, for the species. And that was, that was very nice from my career, career-wise, because it was a promotion that led to a great retirement and, and it totally changed my job duties. So all of a sudden, I was now not so much working on refuge issues, but working on anything that would help the recovery of the species and working very closely with my Canadian counterpart in, with the Canadian Wildlife Service.

Tom Stehn [00:11:29] So between myself and the Canadian whooping crane coordinator, we have a lot of authority to, to implement, you know, programs, whatever we felt was best. And it was, we actually had a MOU to take the whooping crane management away from the State Department. So things like, say, I had a whooping crane, a captive whooping crane, die. And well you want to do something with that specimen, some museum some place is going to want it. So between myself and, and the Canadian counterpart, we would just decide between the two of us where it should go. And it's very simple. We didn't have to contact Washington, D.C. or anything like that. So it was a very, very well-run, well-oiled program, which was, which was very nice.

David Todd [00:12:26] Well, and how does, does Aransas National Wildlife Refuge fit in to the bird's life cycle. I mean it sounds like it's really got an international territory, stretching from Canada where your colleague was, down to the states and, you know, how did the refuge fit into that?

Tom Stehn [00:12:51] Right. Well, the whooping crane, one of the misconceptions I've tried to correct a little bit in the literature is, is that that whooping cranes may never have been numerous, but there were probably at some point 10,000-plus whooping cranes in the U.S., because they, they nested all through the Midwest and Iowa and the prairie states and wintered all the way from Mexico to central inland Texas, like around Kingsville and San Antonio. And there were birds that wintered in Louisiana and south as far as South Carolina. So it was really a widespread coastal species in the wintertime. And when I looked at territory size now and kind of extrapolated that over the area they used to be in, and that's where I came up with the 10,000-plus individuals. So you don't want to think of the whooping crane as mal-adapted or just about to go extinct. Anyway, it was, it was doing fine.

Tom Stehn [00:14:02] And then man came along and some really negative influences of all their nesting habitat in the United States, most of it, anyway, got plowed up and became, you know, Iowa cornfields. So we destroyed like 90-plus percent of all the wetland habitat that they used to use, and, and you destroy habitat for a species and it's going to go into a decline.

Tom Stehn [00:14:29] So and the other thing going on was there was a lot of shooting. I don't want to call it hunting because it was not a formal season or anything like that. It was just that was just what was done back in the 1800s, you'd see a bird that you'd never seen before maybe, and you'd if you had a chance, you'd shoot it. And, you know, there were, there were hundreds of specimens shot. And so the species went into a steep decline.

Tom Stehn [00:15:01] And one of the most fascinating things about the species was that we didn't know where the whooping crane went during the summer. And there was actually a biologist, kind of found by volunteer pilots and they spent two summers just flying all over Canada and I think as far as Alaska, you know, covering wetlands, looking for the species. And we just had no idea where they went. Well, in 1954, a helicopter pilot in Wood Buffalo National Park was on his way to a forest fire and he looked down and he saw two adult white whooping cranes with their young chick. And so at that point, they knew that at least one, where at least one whooping crane family summered and nested. And so then they immediately scrambled other flights and discovered the summer home of the whooping crane.

Tom Stehn [00:16:09] And fortuitously, I mean, it was in a protected wilderness area with almost no access whatsoever. And that's why the species survived. They had a nesting area in that remote wilderness that was left alone. Nobody went in there and they continued. They, you know, this remnant, very small number of birds, possibly as low as fifteen, is what our

data indicates. And that would, would have been four nesting females. So the entire population derives from these 15 birds and the genetics from the 15 birds. So you can imagine genetically there are potentially big issues with, with the gene pool.

David Todd [00:17:04] So there's a genetic bottleneck, in a sense.

Tom Stehn [00:17:08] Correct?

David Todd [00:17:09] Been a long problem.

Tom Stehn [00:17:11] Right. And some, some conservation theory will, will say that, you know, once that bottleneck occurs, the species just can't recover. Well, lo and behold, the species numbers keeps going up. And when I started there were I started in 1982 in the fall. And I counted 71 whooping crane that year. And when I retired in the 2010-2011 winter, there were 273. So. And then in the last 10 years the numbers have jumped up around 500. So the species is doing really, really very well.

Tom Stehn [00:18:01] And it's just a, it's a slow process. The whooping cranes only, usually only produce a chick about every other year. They'll nest every year. But, but the chick doesn't always survive. So I'd say on average, maybe a pair'll bring a chick every other year to Aransas. And so you can see how slow it is for the species to reproduce. They don't start reproducing till they're four to five years of age normally. And so it's a long-lived species and that's why they, they're able to survive.

David Todd [00:18:36] Well, and if I'm following this, sounds like part of the reason for its preservation and recovery was on the one hand, they, they had this protected area, Wood Buffalo, and I guess also they had this refuge at Aransas. And can you give us a little bit of history to the creation of the refuge there?

Tom Stehn [00:19:02] Sure it was, if I'm remembering, I'm not sure I remember right, but I remember that it was created on December 31st, I think it was 1937, and by presidential proclamation. And there was, there was a movement to create wildlife refuges. And even though the, it was known that the whooping crane wintered at Aransas, that wasn't, that was one factor in the decision to create a refuge. But, but certainly all the large numbers of waterfowl there on the coastal marshes was, was equally important. And so it was established and that was extremely important, that hunting was, there was a proclamation boundary put around the refuge so that hunting was not allowed. And the whooping cranes had a undisturbed place to spend the winter, just like they did in the summer. So that was really the key to the recovery of the species, is just, just let them be. Just don't, don't do anything harmful to them, and the species seems like it's going to do OK.

David Todd [00:20:19] So I guess habitat protection, both at Wood Buffalo and at Aransas was key. And then were there refuges along their migration route that were useful?

Tom Stehn [00:20:32] Right. There were some, when the Endangered Species Act was passed in the late 60s, early 70s, there's a feature in that act of creating what's called critical habitat, which is just habitat designated by law that is extremely important to the species. So there was, there were several stopover places that became critical habitat, the Platte river in Nebraska, Quivira National Wildlife Refuge in Kansas. And so those areas, the, the Endangered Species Act, gives them a little additional protection. So, yeah, those were those are key. And of course, stopover habitat is one of the continuing issues of concern as the country gets more

and more developed and, and, you know, continued wetland loss going on, continued threats like more and more power line construction through the Midwest. And then the latest is probably all the wind turbines that are going up. You have tens of thousands of wind turbines being put right in the migration corridor of the whooping crane.

Tom Stehn [00:21:51] So it's like it's like the you know, the threats to keep arising. It's like, you know, who would have known 20 years ago that wind turbines might be an issue? And it's not necessarily that the birds, the whooping cranes are going to collide with the wind turbines, it's just that they, they, hopefully they will successfully avoid them all. But it's taking habitat, potentially taking habitat away from the species. If, if a wind farm is in place, the whooping cranes are probably going to go somewhere else. So there's been a lot of concern about that and trying to come up with a remedy.

David Todd [00:22:32] Oh, I think you mentioned earlier that not only was habitat protection important for the bird's recovery, but also I gather that, that just trying to put some limits on this hunting or shooting, I guess, as you put it, not even seasonal hunting - when was that brought under control and how?

Tom Stehn [00:22:58] Well, there was a, there was actually a citizen group, I think, established in the early 1950s called the Whooping Crane Conservation Association. And they, they are a mix of Canadians and U.S. citizens that really worked hard to to publicize the plight of the whooping crane. And, you know, one of their big messages was don't shoot a big white bird with black wingtips. And they were quite successful in making hunters aware.

Tom Stehn [00:23:37] And then in certain places like Quivira National Wildlife Refuge in Kansas, now, the laws are such that if a whooping crane stops and is sighted on the refuge, then they will stop refuge hunting programs until those birds leave so that they aren't threatened and they aren't disturbed.

Tom Stehn [00:23:59] Now, we had an unfortunate incident at Quivira where whooping cranes will normally fly out from the refuge every morning and look for ag fields to feed. And there were two or three bird shot around sunrise as they, they were off the refuge. So in that case, it was, it was waterfowl hunting program where it led to the death of two or three cranes.

Tom Stehn [00:24:31] And so, you know, it's, it's a, it's an issue that continues as we reintroduce flocks and they're new flocks now, one that is in Wisconsin and that migrates down to, towards Florida in the winter. And then there's a non-migratory flock that spends all its time in Louisiana. Now, the shooting in both those flocks has been a considerable concern. A number of birds have been shot and people been caught. And sometimes the courts are very strict with heavy fines and even jail time. And other times the, the shooter just gets a slap on the wrist and off he goes. So that's an area that conservationists are working on. We're trying to get the word to the courts on how serious this is, too. And how expensive it is to try to reintroduce a whooping crane. It's certainly over 100,000 dollars per bird to put one back into the wild, and all the troubles of trying to get those birds to survive. You take captive birds and put them out in the wild, well, they, they have a lot to learn. So it's been a tough road going down.

Tom Stehn [00:25:55] And conservationists are right in the middle of that reintroduction program. We don't know if it's going to work, but the flocks established in Wisconsin and Louisiana right now are not self-sustaining. They would die out if, if we didn't keep pumping

more birds out into the wild. But but they are reproducing to a to a low extent. So sometimes you just have to give those things time. And when I say time, it's probably a 20- or 30-year effort before you can really assess how whether it's going to work or not.

David Todd [00:26:31] You mentioned sort of pumping birds out there, so there's a captive breeding program for whooping cranes, I gather, that to help supply new birds for release?

Tom Stehn [00:26:42] Right. And that was, that captive breeding program was started in the 1960s where they took eggs from the wild, from Wood Buffalo National Park and flew them down to the Patuxent Wildlife Research Center in Laurel, Maryland. And they basically hatched the chicks there and went through a 20-plus year process of trying to figure out how to how to get whooping cranes to breed and successfully raise the young. And you have, you know, all kinds of issues of, you know, proper nutrition and what diseases come up. And, you know, are you, are you feeding them, if you feed a whooping crane too fast, a young chick, it's, it's, it'll grow too fast, and you can have leg issues where the bones just aren't strong enough.

Tom Stehn [00:27:35] So all kinds of things were learned. And after many, many, many years of research, we, we figured out basically how to do it. And so, yeah, there are like over I think about 150 whooping cranes in captivity right now. And they are very carefully managed to try to maintain the genetics, whatever genetics is left, as you certainly don't want inbreeding at a, in a captive setting.

Tom Stehn [00:28:04] So, yeah, that that's, that's been a very important part of the history of the whooping crane, is that whole effort to breed them in captivity.

David Todd [00:28:16] Well, you've mentioned the importance of habitat protection and hunting controls, and then this vital role for captive breeding. I understand in Texas, one of the key problems is providing adequate freshwater inflows. And I was hoping we could spend a little bit of time talking about that, and seems like there have been cycles of drought problems.

Tom Stehn [00:28:52] Yeah. Well, one of the things as I, as I counted the whooping cranes every year was, you know, from, from the air, I would be looking at what type of habitat they were using. And I noticed in some winters, the whooping cranes would leave the marsh and I'd find them at freshwater dugouts that refuge had created. And they were going there, they were going there to drink. And what we found out was that when the salinities in the marsh starts getting above 15 parts per thousand and certainly, definitely when it gets up above 21 or around 23 parts per thousand, which is approaching seawater, seawater is in the low 30s, parts per thousand. Then the whooping crane have to once or twice a day fly up to these freshwater dugouts and drink fresh water. They can't live in a totally, you know, ocean environment. So, in fact, the estuaries where their habitat is is a mix of fresh and saltwater.

Tom Stehn [00:30:03] So, you know, I noticed that the, you know, that big difference in certain winters, the whooping cranes would behave in certain ways and that would affect their distribution. And then I noticed that we had some bad drought winters and it seemed like whooping cranes were dying. And at first I thought it was maybe predation. And I even set bobcat traps out and unsuccessfully, totally. And that probably wasn't the issue at all. But it was all part of the learning process.

Tom Stehn [00:30:42] And then, of course, in the winter of 2008, 2009. Oh, let me let me back up a little bit while that was going on, I started, you know, thinking about this relationship

between the salinities, which, of course, and how the whooping crane was doing. It seemed like in the, when, when the marshes got real salty, the whooping cranes would struggle and not do as well that winter.

Tom Stehn [00:31:12] And so about that time, I was contacted by the San Marcos River Foundation that was working, working on the inflow issue and a wonderful lady named Dianne Wassenich. And we met and I gave her a little bit of data. And she said, "Oh, my goodness!" you know, this was this was just eye-opening to her, this relationship between inflows and whooping crane health. And she did a tremendous job of getting that information out there. I was, I was, had, I was the scientist and I had to be much more cautious and conservative as far as, you know, what the data showed, just because that's the scientific method. Whereas a private citizen could say, hey, you know, the alarm bells are ringing. We may not have absolute proof yet of this, but, you know, this is something we really need to be aware of. And then so if you if you look at the whole inflow issue, all of a sudden it was something that, you know, I'd start mentioning the newspaper reporters, and Dianne Wassenich did, you know, and pretty soon, you know, newspaper stories when they mentioned the whooping crane would always, would frequently mention this, this relationship and this concern that the species had.

David Todd [00:32:44] And what time, what time were you starting to become aware of the problem?

Tom Stehn [00:32:48] Let's say, boy, certainly by, probably the mid-1990s and early-2000s, it was, it was very clear what was going on. And if I remember correctly, we had a die-off around 2000 and then, yeah.

Tom Stehn [00:33:13] So, yeah, the issue became very clear and came to a head in the 2008-2009 winter where I documented at least 23 whooping cranes died. And it was a bad drought year and there wasn't enough food for the whoopers.

Tom Stehn [00:33:35] What happens is, is two things. Besides the salty conditions that, that probably stresses the cranes, the blue crab numbers are generally decline. Go down. They're are not as much food for the whooping cranes. And then their other main food is a plant called wolfberry. It's a little red berry you find out in the marsh and there will not be as many wolfberries when the salinities are increased. So basically, the, the the higher salinity decreases the food supply for the wintering whooping cranes. And so they, they basically suffer. And so that's why it's really important to have sufficient inflows to provide the habitat that the whooping cranes need. So it's not just a question of having the marshes out there. You've got to have the right balance in the marshes. And, of course, as, as, as all this was going on, you know, the, more and more permits were being given for taking water out of the Guadalupe River and using it for human uses. And that meant, you know, that would just make the bays more salty and hurt the whooping cranes.

Tom Stehn [00:34:56] Though it became an issue to this day that's still going on is, you know, what are the minimum, you know, inflows required to keep the bays productive? And it's not just whooping cranes. It's fishing and birding and everything. It's the whole quality of, you know, all the life and industry, things like clamming and crabbing and fishing. Sport fishing is huge. And you have to have that correct mix of fresh and salt water in the bays. So we can't just keep taking more and more water out of the rivers.

Tom Stehn [00:35:35] And of course, there are permit conditions now on new permits that are issued of, I think, requiring that, that, when the, in drought years that I think there's restrictions on those permits of trying to trying to maintain the principle of keeping enough inflows in the rivers to keep the bays healthy.

David Todd [00:36:05] Let me ask you something that I've heard before, and I'd love to get your view on it. And it has to do with the impacts of the freshwater inflow cut-backs on the crane. And, you know, like you said, they did, of course, need fresh water to drink and they rely on the wolfberry and the blue crabs. But I've heard that that when they go inland, they are exposed to predation when they visit some of these freshwater pools and that that leaves some pretty vulnerable. Is that the case?

Tom Stehn [00:36:48] Maybe to a limited extent. Predation is generally, we don't think is as much of a factor on a healthy whooping crane. I mean, I've had four boat captains witness a whooping crane in flight chasing a bobcat and the bobcat being at full run trying to get away from the crane. And often you see coyotes that are stalking the marsh and a whooping crane looks at the coyote and the coyote just goes in a different direction. It's not going to mess with the crane.

Tom Stehn [00:37:24] So the predation comes in when the, when the birds get sick and you can have a bird with something like tuberculosis and it's just not wary and it goes to a freshwater dugout. Yeah. Then a alligator or a bobcat can easily get it. And it's. Yeah, that's the factor probably then is the disease, as much as anything else, rather than just predation.

David Todd [00:37:49] OK, well, that's interesting. And sad because I guess each one of these birds represents so much of a, you know, whether the whole species has a future. So, as you said, a lot of this came to a head after the drought of '08 and '09. And I gather there was this lawsuit brought by the Aransas Project, and I was hoping that you could give us sort of a ringside view of that. I understand that you gave some very important testimony during the trial.

Tom Stehn [00:38:31] Right. That was that was quite, quite interesting.

David Todd [00:38:41] You sound like a, an understated kind of person.

Tom Stehn [00:38:46] Anyway, I mean, it was a a private organization, you know, suing, suing the state and the legal ramifications of that is that federal employees don't have to get involved with these, with a private lawsuit. So, for example, I had, there were precedents, legal precedents, saying that I would never have to testify in a suit like that. The difficulty was that the lawsuit was, was entirely based on data that I had collected from my aerial surveys in documenting the loss of these 23-plus whooping cranes that winter.

Tom Stehn [00:39:34] So, you know, the lawyers from both sides showed up. I think, I think the defense spent about two weeks. They'd send three or four staff up and they, they spent two weeks Xeroxing data from my files that I had collected. And, you know, we said, fine, you can, you can have copies of all that. It's public information. And they have their - we made him bring her own copy machine, and gave them a room. You know, two weeks later, there it all was. And that's.

Tom Stehn [00:40:13] So there was a lot of data and a lot of questioning on how I had collected the data, whether it was valid or not. The defense basically was denying that these

whooping cranes were lost. And of course, I was adamant that, you know, I knew these birds very, very well. And, you know, they were there in the early winter. And then, you know, I could say to the day what day they disappeared. And even though I didn't have carcasses or anything like that, but I knew the birds well enough that I was absolutely confident in what had happened. So that turned into a lawsuit. And I was asked to testify, and, and, kind of, I was advised not to, based on this legal precedent. So I declined. And then I retired in the fall.

Tom Stehn [00:41:07] And about two months after I retired, I get a phone call. And I was in the hot tub at the time and jumped out of the hot tub, grabbed the phone and the, and the voice on the phone said, I'm a federal agent sitting in your driveway and I have a subpoena for you. And the subpoena is for you to immediately go to court. And so I got dressed and had a quick bite to eat and put on a tie and a dress shirt and headed to court.

Tom Stehn [00:41:43] And of course, the federal attorneys were saying, "no, no, no, no, you don't you don't have to go to court. We'll, we'll take care of it." And I said I said, "well, I said you, you better take care of it, because if you don't, I'm going to be there in court, you know, because I have no choice."

Tom Stehn [00:42:02] So anyway, I went to I went and I met with the I had federal agents meeting me at the courthouse and kind of me walking me through the steps and that. And what had happened was, was in the early testimony of the trial, the witnesses that had kept, my name had kept coming up. As you know, "Tom had found this. And Tom did this." And so the judge said, "well, finally, who is this Tom guy and why can't he, you know, why can't he get here and testify?".

Tom Stehn [00:42:32] And so basically, that's what happened. I went to court that afternoon. They had some legal discussion about my role. And the next morning I was on the stand and I spent 6 hours on the stand testifying about the data that I had collected. And that made a whole lot of sense to me because, I mean, I was the expert as to what had happened and what I'd found. And it was perfectly logical for me to be the one testifying, and to add what I could to the proceedings.

Tom Stehn [00:43:05] So it was quite a quite a way to end my career, even though I was officially retired by then. But it kind of kept everything current. And there wasn't a whooping crane coordinator at the time. The refuge hadn't replaced me yet. So the media kept calling and I had, I did lots of interviews and I did a big, it was Texas Monthly or something, I did a big story there. Various things. And so really for about a year, I kind of stayed, after I retired, I kind of stayed, had my foot in the water still with all this stuff going on. And then after about a year, the Fish and Wildlife replaced me with a new whooping crane coordinator, and then I could I could much more easily back off to, to kind of get myself removed from it.

Tom Stehn [00:44:00] So but that lawsuit was extremely stressful and, and it was kind of funny. And I thought back to the very beginning of your interview, where you mispronounced my name a little bit. But anyway, my name is pronounced "Stane".

David Todd [00:44:17] Oh, my apologies.

Tom Stehn [00:44:19] Yeah, no problem. And anyway, twice during the trial, the attorneys, instead of saying, you know, Mr. Stane, they did a Freudian slip and said, Mr. Crane. And when the defense did that they weren't very happy about that mistake. But I remember the interesting thing about the testimony was, of course, the, the attorneys had had no chance to

talk to me about it. You know, I had not done any depositions or anything like that. So they didn't know what was going to happen. And, from, from the discussions in court when it was decided at five o'clock on the day, at five o'clock in the evening, that, that I would testify the next day, they really had to scramble as far as what are they going to ask me and, you know, how can they attack what I did and etc, etc, etc.

Tom Stehn [00:45:25] So it was it was a very interesting situation and extremely stressful.

Tom Stehn [00:45:34] At one point, the defense held up a gave me a diagram of a map showing where every whooping crane of the 23, where, what territory and what part of the refuge where they had, where they had died. And they, and they said, Mr. Stehn, you, you know, "can you verify that this is a map that you drew?"

Tom Stehn [00:46:02] I said I've never seen that map before in my life. Sure, it was my data, but I hadn't done that specific map, the lawyers had. And so, so the judge at that point wanted me to draw a map and indicate, providing that data. And I, and I said, "yes, your honor, I can do it, but it's going to take a little time." So there I am sitting in a courtroom with 50-plus people, you know, spending 20 to 30 minutes, to draw a map and talk about working under pressure! And you know, everybody is quiet. And, you know, the lawyers were standing there and finally the judge says, "oh, you know, the lawyers, you can sit down for now until Mr. Stehn gets finished." But that does that. And then they, they lost. I was trying to map sort of, some kind of electronic method. And overnight, since there was an adjournment in my testimony. They lost the work I've done on the map. So I had to start the next morning and start over. But it didn't take that long. I mean, I knew these birds backwards and forwards, and I had all my notes and I outlined exactly where the, what territories the whooping cranes had disappeared from. And so on.

David Todd [00:47:20] Can you tell us a little about how you, how you knew, and how you collected this data, these aerial surveys that you worked on for so many years? How did those come about, and how did you conduct them?

Tom Stehn [00:47:35] Well, boy, that's a, that's a long, that's, that's a long answer. But basically, I would fly one day a week in a small aircraft. I was the observer and we had a professional pilot and we would fly transects across the marsh and I'd have a map on my lap. And whenever I saw a whooping crane, I'd plot the location - how many there were, whether it was an adult or a juvenile, a chick.

Tom Stehn [00:48:07] And. You know, I've been doing this. You know, I did this for 29 years, so and I quickly learned that the birds were territorial, that a, that a adult pair will will carve out and defend a territory and keep all other whooping cranes out of that territory. So I would see the same pair return, year after year, to the same territory. And we showed that that was the case when some of the whooping cranes were radioed and color-banded.

Tom Stehn [00:48:42] And so. So you kind of knew, you know, the pattern of cranes you were seeing on your aerial flights became very similar, week to week to week. And you can imagine, envision, envision if you're in a room and you took a wad of 50 dollar bills that you had in your hand and you threw them up in the air and then somebody said, "OK, whatever bills you find, you can keep." Well you're going to, you're going to, you're going to cover that, you're going to search in that room extremely thoroughly. You're going to cover every square inch of that, of that room looking for the money. Well, that's exactly what we did with the whooping cranes.

Tom Stehn [00:49:33] And we would spend 6 to 8 hours flying narrow quarter-mile wide transects. And, you know, I got very expert at the able to identify the whooping cranes because there's a lot of white birds out in the marsh. That's what makes it hard. There's white pelicans and white egrets. And you have to pick out the, the, the larger whooping cranes. But I got very good at it. And you can see a whooping crane on a sunny day. You can see a whooping crane at least a mile away, sometimes as far as two miles. And yet we would do transects that we're a quarter-mile wide. So I would have numerous opportunities while flying to see a specific whooping crane. And so my accuracy was, was quite high.

Tom Stehn [00:50:28] And I would average when I'd go out and do a flight, I'd find probably between 90 and 95 percent of the flock every week. There were always a few that you couldn't find. And, you know, maybe they were at a freshwater dugout. You know, maybe they had been on one edge of their territory when you were flying the other edge and you just. Or one of the most common ways to miss them was to fly right over the top of them. The airplane had a blind spot based on where the motor was. And it was hard to see right directly in front of the plane.

Tom Stehn [00:51:01] So, but I was finding 90 to 95 percent of the cranes every week. And you'd compare the pattern one week to the next and you'd figure it all out. And so I got to know these cranes kind of like I know my grandkids. I mean, they, I've been watching them for 20 to 30 years, the same birds coming back to the same places.

Tom Stehn [00:51:21] So, so as far as how did I know when one died? Well, whooping cranes, the adults, will, will hopefully come back every winter with a chick. And the chick is, is a brown color and that chick stays with the parents pretty much throughout that first winter. So if I go out one week and I see the two adults and their chick and then I go out the next week and the chick is missing. OK, well then I would immediately do extra searching in the area, making sure I didn't overlook the chick. And then at the end of the flight, at the end of the day, I'd go back to that territory and look some more for the chick. And if it was, if it was still missing, then I would make a special note. And the following week on my flight, I would go out and do extra searching in that area. And if it was still missing, then I would declare it as, that it had died. And six times in my career I was up in the airplane and declared a chick is missing. I couldn't find it. And I'd go out the next day with a party of volunteers. I'd usually get six or eight of the refuge volunteers and we'd hike, hike the marsh, just hike transects, walking through the marsh. And six times I was able to find the carcass. So that, that showed me that, you know that, yeah, when I said a bird was missing and then it was missing.

Tom Stehn [00:52:56] Now other people in the Fish and Wildlife have totally ridiculed that. They say you can't say that the bird is dead, that maybe it just went somewhere. Well, I know these birds, that the chicks just do not leave their parents. They're just gonna be right under foot of the parents. Just easy as pie to find a family group all winter long, if all three of them stay healthy. So that was kind of my methods.

Tom Stehn [00:53:24] And, you know, the defense in the trial was, was taking the tack that all the birds just flew somewhere else and Mr. Stehn missed them and didn't find them. Well, no. You know, I've been doing this for 30 years, so I knew, I knew these birds. And, you know, I've never had a chick, you know, disappear on me and then come back. I mean, they're always, and they don't, they don't like all of a sudden fly a hundred miles away and spend the winter somewhere else. They stay with their parents. So that was the, that was the main way of, of, you know, finding that a bird had died.

Tom Stehn [00:54:01] And then, you know, this mortality seems to happen in the drought years, when there's not enough food. So it all, it all was logical and came together.

Tom Stehn [00:54:11] There was one, I'll tell you one last story of the trial, it's kind of a interesting story, as far as, right near the end, the, Mr. Jim Blackburn, the attorney, was summarizing his case and he's, and he's asked me right at the end as a summary question of, well, Mr. Stehn, is it, is it, is it correct, is it, to the best of your knowledge that 23 whooping cranes died during the 2008-09 winter? My answer was, "no."

Tom Stehn [00:54:48] And he, you talk about a pause. Well, he had to do, he had to do what a lawyer doesn't ever want to do, he had to ask a follow up question where he certainly didn't know the answer to it. But he had no choice at that point. And my answer to his follow-up was, was that my best estimate was that at least 23 whooping cranes died, that there were probably more, so that my best answer was not 23 exactly, it was probably 23 or more whooping cranes because there were, there were white birds out there that we call subadults that, that are not breeding age yet. And they move all over during the winter. Well, birds like that, I'm not going to be able to detect that one was missing. Certainly not as easily anyway. And so, so the subadult part of the population, I don't know what the mortality was on that part of the flock. So that's what I said, "well, at least my best answer is, is 23 or more whooping cranes died during that winter."

David Todd [00:56:00] Fascinating. You know, it might help me understand, and maybe others who listen to the recording, to get a grasp of your way of surveying by comparing it with, I guess, the current way, this distance sampling, similar to the waterfowl censuses that are performed now for the cranes, or maybe to to compare what you did, against the computer simulations, the SAGES model. How would you contrast your approach, these other two ways thinking about the numbers?

Tom Stehn [00:56:41] Well, the, the when I left it. A couple of things going on when I got the time I was retiring and one, one thing that went on and played a part in my decision, I think, was my last year of flying. We were, we had just started a survey, a census flight. And about 20 minutes into the flight, all of a sudden, we had a flock of American avocets, a shorebird, flush up. And just, they were everywhere. They were above the windshield and below and left and right, just at like 80 birds. And we plowed into them.

Tom Stehn [00:57:21] Two of the avocets came through the windshield. And there we are. We were kind of really stunned. And, you know, glass had gone flying everywhere. Of course, we had helmets on. We were OK, but we were kind of stunned. And the airplane starts going down a little bit. And I look over at the pilot and he's kind of shaking his head and, you know, figuring out what had happened. And I'm, I'm just about to pull on the controls and make sure the plane didn't go down any farther. And, you know, then the pilot kind of snapped, you know, was immediately back to flying and everything was fine. And we landed, ended the flight and landed without a windshield. But that kind of played a part in my thinking that, well, maybe 29 years of these, you know, somewhat dangerous flights was enough.

Tom Stehn [00:58:14] And, and about that time, the Fish and Wildlife Service decided that to, to, to do better science that they had to, that any of their animal counts, they wanted a standard deviation derived, statistically a method of how accurate the count was. Well, my methodology was a census. I went out and I tried to find every crane. And normally, to get a standard deviation, you do a survey where you only survey a portion of the population. And

then, do your mathematical statistics and come up with how accurate you think your, your survey was.

Tom Stehn [00:59:03] Well, I, to this day, contend that a census, you know, if you're able to do a census of a population that it's much, much, much more accurate. So whether I had a standard deviation or not with my census, it didn't matter. It was just so much better than a survey.

Tom Stehn [00:59:24] Well, when I retired. Then somebody else took over the flying and nobody, there wasn't anybody else that really knew the birds as well as I did. And so, rather than develop that expertise that I had developed over 29 years, they decided to go to this distance sampling technique and I am quite critical of that, that technique, I don't think it's, I don't think it's valid.

Tom Stehn [00:59:58] There's, there's two main drawbacks. Is one is that you have for this for the system to work, you have to see the animals that are closest to the airplane and from my experience, those are the hardest ones to find that from that blind spot right in from the plane. So I think the whole method is, the way they're doing it, is questionable.

Tom Stehn [01:00:23] And then it, it bothers me that that, you know, when there's only at the time there were only 200 birds out there, why not try to find them all? I mean, there was just no need to do a survey and to show you the expertise that I had developed for finding cranes: late in my career, there were some other biologists on the refuge and I'd let them fly along with me, trying to develop their ability to do a census. And so I was flying one spring with a, with a younger biologist in the front seat and the pilot, and I was in the back seat. And it was it was late in the spring and we didn't know if any whooping cranes were still there. So that that's actually the toughest flight to do and where you basically have nothing to count all day and you're flying hour after hour covering marsh, not finding any whooping cranes.

Tom Stehn [01:01:18] Well, anyway, that particular spring day, I was in the back seat. And you know, the visibility in the back seat of the plane is horrible. But I look out and I see a single whooping crane in front of the plane and I don't say anything. And I, I wait to see if the pilot or this other biologist will see it and they don't. And we pass it and we go on and I say, hey, guys, we just, we just flew by one. So they circle the plane and yeah, there it was, you know, well, here I am from the back seat with absolutely horrible, limited visibility. You know, I'm finding cranes from the back seat and they can't find them from the front seat.

Tom Stehn [01:02:00] And it was just it was just expertise I developed. I mean, it was just you do anything for 30 years, you're hopefully going to keep good at it. So anyway, with it, you know, without, without my expertise, they decided to meet the Washington policy guidance on coming up with the survey technique with a standard deviation.

Tom Stehn [01:02:21] So now if you ask how many whooping cranes are at Aransas, they'll say, you know, 500, I think to the latest count was 506, plus or minus 50. Well, that's ridiculous that it's only, you know, if there's 500 birds, you should be able to get more accurate than plus or minus 50. I mean, my counts, I always figured it was accurate within one or two birds. Of course, there weren't as many birds. So and I do understand, as you get more birds, they're certainly not the need to keep track of them as closely.

Tom Stehn [01:02:53] But what they've done is they, they have not ever since I retired, the last 10 years, they have no estimates of winter mortality. Absolutely none. They just don't

even try to get it. And I think that's one of the key research questions as to, you know, how often are these mortality events occurring during winter and what is the reason? Is it predation? Is it is it inflows? Is it disease? You know that that's something Fish and Wildlife should be focusing on. So I'm, I'm very critical of this survey method, just not a fan of it at all.

David Todd [01:03:32] Well, you talked a little bit about the, I guess, the course of your experience there of doing these surveys and then through the trial where you got to sort of explain the results of these censuses. I just wondered if you could talk a little bit about the result of the trial itself, and then maybe we could talk in closing about the years since that and what you've seen happen.

Tom Stehn [01:04:03] Well, the trial, of course, the, the, the first round, of courts, the whooping cranes won and the water developers lost. And the, and but when it went to the, when it was appealed, and it went to a more conservative district court, I think in New Orleans, I'm not sure. But there the judges overrule the verdict. And they said there just wasn't a relationship between inflows and whooping crane mortality was, was a little bit too distant - that they weren't comfortable with, with making a judgment against the state based on that distant relationship.

Tom Stehn [01:05:00] Now, you know, it is, it is kind of like, if you sued a, if you're worried about polar bears and you sued a oil-fired power plant in Texas for raising CO2 levels and climate change and hurting polar bears. Well, you're, you're absolutely correct. That relationship is there scientifically, but it's kind of what I consider a distant relationship. You're not directly going out and shooting bears or killing bears. It's kind of, kind of like there's so many factors involved and so many other players in the whole game, that the courts are reluctant to rule against that power plant.

Tom Stehn [01:05:53] And so I think sort of the same thing in the whooping crane issue that it just, it just seemed a little too distant for those conservative judges. Now, you know, I certainly disagree with that ruling, but that's, that's kind of, that's kind of the way conservative courts will look at that and.

David Todd [01:06:19] OK. And then I guess.

Tom Stehn [01:06:23] One other thing I had on that thought was, you know, even though the conservation organization lost the lawsuit, what they did was important because the record is, is now a written trial transcript that firmly establishes this relationship between reduced inflows and whooping crane mortality. I mean, I've published a paper with, with a scientist named Bruce Pugsek that statistically looked at all the data and there's definitely a relationship between those factors. In a drought year, you're going to have more whooping cranes die. So the record is there. And there was really no, no successful defense. I mean, they tried to attack all our methods and they, they were unsuccessful. And if you read the trial transcript, it's very, very clear.

Tom Stehn [01:07:24] So in that way, it was a worthwhile event to have that trial and everything, even though there was no verdict. And the, the shame about the whole trial was the, the only thing that the plaintiffs were asking for was for the state to develop a plan to protect sufficient inflows so that the cranes wouldn't be hurt.

Tom Stehn [01:07:51] Well, that's something the state should have wanted to do anyway. And they should have, you know, they should have come up with a, what's called the HCP, a

habitat conservation plan. So rather than that big lawsuit, I wish our director of Fish and Wildlife had met with the state officials. And if they just agreed to do that habitat conservation plan, then we wouldn't have needed that trial and all that.

Tom Stehn [01:08:19] So to this day, I mean, there's still all kinds of discussions and, and I don't know if I want to call them battles or not, but that's probably what they are, going on about, you know, how Texas is managing their water and how are we going to protect the bays.

David Todd [01:08:41] Yes, do you have any views about these discussions between Jim Blackburn, Ann Hamilton, and all the Aransas Project folks and the GBRA?

Tom Stehn [01:08:52] Well, I think that I think it's a, you know, it's, it's incredible that the two sides are in discussion. I, I really haven't followed the details of what they're trying to come up with. The big bugaboo is the, the water authorities are just not, the only water they're willing to provide for whooping cranes is what I consider what I call, "extra water". Mean, if there's a if there's a human use or a human demand for that water, the River Authority is going to, that's where the water is going to go, is going to go to people. So there's really no acknowledgment on their part that, that the whooping crane needs the water too.

Tom Stehn [01:09:43] And so I don't, I don't know in the long run. I mean, that's, that's, I don't know how it's going to get resolved. And it's an absolute huge problem for Texas because the population of Texas is just growing unbelievably, and to the point of unsustainability. And you know, you can just, I guess I'm an old-timer now and I can say things like, "things just aren't the way they used to be." But, but I try to get away from that as I get older that, you know, we're just getting, you know, more people in Texas than the state can handle. And water is is one of the absolute keys for that.

David Todd [01:10:33] Right.

Tom Stehn [01:10:33] I don't know. I don't know the, what the, what Jim Blackburn and the state, and the water developers are going to be able to come up with. It's certainly a step in the right direction. And I, I absolutely applaud their efforts and wish them luck. So we'll see what happens.

David Todd [01:10:57] Well, I have one last question about the cranes. You know, we talked a good deal about, you know, the need to protect their habitat in terms of, I guess, just having acreage where they have sanctuary and then the need to provide adequate water flows to ensure that there's wolfberries and blue crabs and so on. But I've read a little bit about some other factors in their future, and I'm curious about your attitude about those issues. One is I've heard that black mangroves are spreading and apparently have an effect. And then also there's this, of course, prospect of rising sea levels associated with climate change. Do you have any thoughts about how those factors play in?

Tom Stehn [01:11:56] Yeah. My feelings are the species is in big, big trouble. You're talking about whooping cranes that will only use water that's like up to 2 feet deep for feeding and wading through and finding crabs. They don't go in deep water. Well, you know, sea level rise is forecast at, what, 3, 3-plus feet by the end of the century. And, you know, some models in Greenland, ice cap and all that indicate a sea level rise of more than 20 feet is more realistic. So basically, all the areas that the whooping cranes are using now are going to become

unsuitable. And when a, when a species loses its habitat, it's going to go into a steep decline and not survive.

Tom Stehn [01:12:47] So short-term, the picture is rosy, long-term, because of the sea level rise, it's kind of scary. Now, as, as marsh becomes too deep for the cranes, new marsh will be created. So there's been some studies on what the coastal look like in 50 to 70 years and, you know, with different levels of sea level rise. So there will be some habitat for them.

Tom Stehn [01:13:18] So maybe it's not as dire as I describe, but it's certainly something that the, that the human population as a whole needs to get a handle on. I'm a firm believer that we've got to cut CO2 levels, so we've got to do it immediately, immediately. The science, the science is there. The science is strong. And, and it's just one of those programs that we have to do.

Tom Stehn [01:13:47] So the, the other, the other issue is the black mangrove is spreading north. It was always, the limit of the black mangrove was always south of the crane range. And so you'd go south of Port Aransas and you'd have black mangrove all the way to the Mexican border. But it didn't go, it didn't move north because it was killed out by freezes during winter.

Tom Stehn [01:14:17] And it takes a good freeze to kill a black mangrove. It's, it's not a matter of freezing temperature for hours. It's more for days. You need several days where the temperature stays below freezing. And then that'll kill the, totally kill the black mangrove. If you got just a short freeze, it may top-kill the mangrove, but it restarts and come back.

Tom Stehn [01:14:39] So, you know, in the last, my last 10 years' work on the refuge, all kinds of black mangrove started coming in and, and moving north. And it's all over Matagorda Island. You see it now as you take the boat tours through the refuge. It's right along the intracoastal.

Tom Stehn [01:14:59] And it's a question of how thick is that mangrove going to get? Right now, it's, it's fairly low. It's dispersed. It's probably not that much of a factor. But, any place where I've been, where there's mangrove habitat, it became, becomes absolutely solid, where there's, where the mangrove displaces all the other plants. So you just have a mangrove forest. So it's going to replace the wolfberry. It's going to line all the ponds where the blue crabs are. And it's basically, I think, you know, if the climate keeps warming, then that the whole lower Texas coast where the whooping cranes are, are going to, it's going to become mangrove habitat, which is not suitable for the crane.

Tom Stehn [01:15:50] So that's just an absolutely huge issue.

Tom Stehn [01:15:54] And something, it was something I started working on towards the very end of my career and I didn't get very far. But whether, you know, whether it's possible to control black mangrove in, in, in the crane area, I mean, if there's just thousands of them, so it would be extremely difficult. But to me, we've got to come up with a solution for that. It's a, it's definitely a long-term threat.

Tom Stehn [01:16:23] And then, of course, the other threat is what's going to happen to all the marshes around on the Texas coast? Can they, can enough marshes be protected and kept human development away from them to provide homes for the whooping cranes? I mean, a lot of marshes, the developers want to turn into a canal-lot sub developments.

[01:16:47] And so those battles are going on and, yeah, so the habitat of the one thing crane is really not secure. And so that's a huge threat for the species.

David Todd [01:17:05] Well, this has just been fascinating and really helpful. Let me just ask you a kind of closing question. Were there any sort of overall lessons that you've taken away from your many years, a generation really, of efforts to monitor and protect the cranes?

Tom Stehn [01:17:26] Well, there were two things I'm kind of proud of - things that that happened while I was there at the refuge.

Tom Stehn [01:17:38] One was. I used to go out, I used to work really hard with all the paperwork and administrative stuff, and I tried to, one day a week, always get out in a boat and just look at cranes all day. And I was doing studies on the color-banded cranes and kind of following the life history on individual cranes and who they mate with.

Tom Stehn [01:18:03] And anyway, in the process of that (I lost my train of thought here for a second, but), oh, one of the one of the things I did out in the boat every, is I realized that after a few years I realized that the banks of the Intracoastal were eroding and we were starting to lose marsh ponds just from the wave action from the barges and from wind.

Tom Stehn [01:18:34] And so I, along with the biologists in Corpus Christi, I, I put stakes on the edge of the Intracoastal. And every year I'd go back and measure, measure the amount of bank that was lost through erosion during that during the previous 12 months. And so that was a very simple project. I mean, just pounding in stakes and measuring. And I think I had like no more than eight or ten sample points. It wasn't anything big or elaborate. But I came up with a rate of loss and I think it was between one and two acres a year of this whooping crane habitat was being lost to erosion.

Tom Stehn [01:19:22] Well, because it's critical habitat, by law, it's illegal to do harm to critical habitat of an endangered species. So I think that was the National Audubon Society brought a, sent a letter to the Corps of Engineers saying they would sue. They were going to sue, gave them a 60-day notice, or whatever it was, over this loss of critical habitat.

Tom Stehn [01:19:48] And through the course of this threatened legal action, the Corps of Engineers finally decided and admitted that since they were maintaining and operating the Gulf Intracoastal Waterway, which was the source of all the barges and traffic and wind action against the crane marshes, the Corps decided that they would do something about it. And they approached Congress and they got, I think it was, fifteen million dollars appropriated to put in erosion barriers along the Intracoastal to stop that erosion.

Tom Stehn [01:20:29] And previous before all that has happened, we had organized through private industry and Conoco. Conoco had a big gas field on the refuge and they put out I think it was like 20,000 cement bags every year. They would, it would take a week to unload them along the banks where this erosion was going on. And then we'd go out there one day with a whole bunch of volunteers and the tour boats took them out there. And, and we would lay these cement bags in place and, you know, put up these structures to save these ponds.

Tom Stehn [01:21:07] Well, the, the, that worked fine, but it was it needed to be done on a much bigger scale and much sturdier construction. So they the Corps came up with these cement mats that they laid in place, lining the banks of the Intracoastal. So every time I go out

in a boat now, you know, I'm kind of, you know, kicking myself, for I'm the biologist that played a big part in lining a beautiful national wildlife refuge with cement.

Tom Stehn [01:21:38] But we had no choice. It was just one of those things we had to do. So now the 15-mile length of the refuge is all cement mats. And, you know, but those ponds are protected. The mats are doing their job. So that was a key. One of the things I'm really proud of is something that got done while I was there and I was on the committees looking at this problem. I mean, you always form committees. Well, I was on those committees enough years that I kind of outlasted a lot of the Corps biologists. And I think just through perseverance, I was able to make some progress. And really the threatened lawsuit and the, the teeth of the Endangered Species Act enforced by our Ecological Services office, the Fish and Wildlife service in Corpus Christi, I think those were the key players and that resulted in those mats being put in.

Tom Stehn [01:22:35] David, there's one other thing I'd like to mention.

David Todd [01:22:38] Yes please.

Tom Stehn [01:22:39] One of the, one of the other projects I was involved with is one day a biologist came into my office named David Template, and he worked for the oil and gas company Mitchell Energy out of the Woodlands and in near Houston. And he said, we, we have some gas wells out in Mesquite Bay and we need to dredge, we need to rework those wells. And we need a place to put dredge spoil and we don't have any place to put dredge spoil. And so he said, what about, would you support the use of that dredge spoil to create marsh?

Tom Stehn [01:23:26] And I said, "sure, David," I said, "that's great." "But", I said, "you'll never get permission to do that." He said, he said. "I've worked, I worked with Corps permitting for 10 years in my previous life." And he says, "I think I can get permits." So we put this all together, this project and it was a very interesting exercise because think, think how long environmentalists fight about, you know, and developers, you know, whatever the industry is, there's this big long, there's always a big, long fight and very costly in environmental impact statements and delays. And, you know, and it just costs. It can cost millions of dollars. And you haven't, you haven't. It's just a process. You haven't used that million dollars to do something good for the environment.

Tom Stehn [01:24:26] Well here in this Mitchell Energy case, David Template got the permits. And one of the reasons was I had done a study, or did a study about that time, of showing, I took old photographs of the, of the refuge before the Intracoastal Waterway was constructed. And I showed, after the construction of the Waterway around the 1940s, I showed the changes in habitat that had gone on. And I showed that about, I think it was 1500 acres of habitat had been destroyed by the creation of the Gulf Intracoastal Waterway and the dredging. So Parks and Wildlife was willing to say, "OK, well, we'll accept that figure and give you the 1500 acres that you can go out and create marsh habitat that used to be there." Because Parks and Wildlife and fisheries people don't like taking open bay bottom and covering it with dredge spoil because it hurts fisheries. But they were willing to, you know, because of this study. And loss, demonstrated loss of habitat, they'd go so far.

Tom Stehn [01:25:46] So, anyway, David Template called together a group of us, fisheries biologists and ecological services and myself. And there were about six biologists. And David was there with Charlie Belaire, who's an environmental consultant. And so the two of them, David and Charlie, were outnumbered at one of our meetings. And the purpose of the

meeting was to design this marsh creation project. And, you know, Mitchell Energy just said, well, tell us what you want. So in 45 minutes, we came up with the design - all the agency biologists. And it wasn't designed just for whooping cranes. It was designed for fish and the whole gamut of species, bird nesting, that sort of thing. And at the end of 45 minutes, David Template said, "was that all you guys want?" You know, we're so used to biologists as being in these meetings and we're usually outnumbered ten to one. And you know, this was such a unique experience for us, for this industry, just to say, you know, look, we need, we need to create this marsh, just tell us, tell us what you want.

Tom Stehn [01:27:04] So, you know, we, we, we decided that, OK, let's, let's build that marsh and let's have it there. At least let's have it last 50-plus years. So again, putting cement mats down to make it last. And the marsh was created. There were three different projects. And then the Corps of Engineers now has a beneficial use program where they can use dredge spoil and create marsh. So I'm very pleased that, that, that whole avenue has been pursued and I think somewhat successfully. And, you know, creating some of the marsh habitat that was lost.

Tom Stehn [01:27:44] So but that whole exercise with working with that Mitchell Energy, in this case, of if, if environmentalists and industry would just agree to stop all the bickering and if industry would just say, OK, we're going to we're gonna do something good and it's going to cost us some money. But, but just, just keep us away from these, you know, ten years of trying to get a permit to put in a gas line or something. Let's put the gas line in and we'll do, we'll do environmentally what you want, even though it's going to cost us more money. I think it's a win-win situation for people. And so I have faith that, that industry is willing to work. And it will cost more, but it's, it's certainly the cost is less than all the bickering and lawsuits and stuff that are going on now. So I think there is a way forward on all these environmental issues.

Tom Stehn [01:28:46] So we'll just we'll just kind of see what happens.

David Todd [01:28:50] And that's a very encouraging note. And I want to say thank you for that. These are such big issues and big investments and takes lots of years to see them through. And so I want to thank you for all the time and thought you put into it over your career. I don't want to trouble you with any more questions, but if you have anything to add, I'm certainly all ears.

Tom Stehn [01:29:21] I just had to wait. Too long-winded - I apologize for that.

Tom Stehn [01:29:25] But I kind of had two highlights, other highlights of my career, as far as counting the cranes. Of course every week that I flew, you fly at 200 feet and you fly like a 5-mile long strip, looking at the marsh and then you do a 180-degree turn and go back across the marsh, you know, slightly offset from where you were. So you're doing a lot of turning. And I would get a little bit airsick every week - not too bad - but enough that I sure didn't feel good in the plane. And but that was just part of the job. And so I did it. So one of the highlights of my career was the day, like I said, in '82, 1982, there were, when I started, I counted 71 whooping cranes. Well, my manager at the time, Frank Johnson, he always said he wanted to be manager when Aransas reached 100 whooping cranes. Well, Mr. Johnson passed away very suddenly, and a day or two later, I did a flight and came up with the 100 whooping cranes. So that was that was kind of bittersweet, I guess, that he hadn't lived to see that. But there were actually 100 whooping cranes here when he passed away, I just hadn't done the count yet.

Tom Stehn [01:31:00] And the other the other interesting milestone for me was when we reached 200 whooping cranes that I had, I had been on a business meeting, working on the Florida whooping crane reintroduction, and I had a flight to get home to do a census flight. And I, there was, there was weather issues and my flight from Houston to Corpus Christi got canceled. So there I was, I was in the Atlanta airport. The airlines was gonna make me wait 24 hours to to fly me back to Corpus Christi. And I said, "no, no, no. I've got to get I've got to get back to the, to do a census."

Tom Stehn [01:31:44] So I, they changed my ticket and they flew me into Houston and I rented a car. And by this time it was like I got home about 3:30 in the morning and my flight was at 7:30. So I got about three hours sleep and I get up in the airplane and I'm absolutely exhausted. You can just imagine. And, but I, we did our flight and I just plotted the cranes the way I always plotted the cranes and everything was fine. But I was tired and I didn't I didn't look at the data till that evening. And I'm sitting there at my kitchen table and plotting all the numbers and looking, comparing it with previous flights. And I realized that we had topped the 200 mark for the first time ever.

Tom Stehn [01:32:31] And I always remember that flight because it's just so tired. I don't know how I did it, but you just, it was just, it was just habit at that point. And the thrill I had of seeing all my data and I was like 206 or something like that. I was above that 200 mark for the first time ever. So now I can just imagine what it would be like flying now with 500 cranes. I mean, it'd be, it'd be difficult. You probably couldn't cover the whole crane area in a day. You'd have to fly two consecutive days. But the cranes don't move around that much. So you could do it, or you'd have two airplanes at the same time. But of course, the need is not quite as great as it used to be as far as keeping track of every bird. So we'll see what happens. It's kind of kind of fun.

Tom Stehn [01:33:21] And the most the most interesting thing about my whole job and all those years is you never knew from one year to the next whether they were going to be more whooping cranes coming back to Aransas or whether there'd be less. So it was really fascinating to to do those flights and have the Austin Statesman or The New York Times or Washington Post give me a call and say, what's the status of the flock this year?

Tom Stehn [01:33:48] And people are just fascinated by this. I mean, they grew up, so many Texans grew up learning about the plight of the whooping crane and how few there were. And they all, so many of them have memories of coming down to the refuge and seeing a whooping crane or hearing about one of the migrations somewhere in Texas. And it's just part of the history of the whole wildlife scene in Texas.

Tom Stehn [01:34:16] I mean, it's just an incredibly fascinating species. I spent, I spent two springs, a month each time, tracking radioed whooping cranes up to Canada. I was on the ground crew and I'd drive like crazy while the birds were flying in an airplane, and kept track of them, and then would radio us in the pickup truck on, you know, where, where are the cranes had landed for the night. And then we'd watch them. And the next morning, when the cranes started their migration flight again, we'd radio the airplane and they'd do the tracking during the day. And that was just a absolute fascinating time to see whooping cranes in migration and how they used the habitat and the issues they had.

Tom Stehn [01:35:03] And at one point, one of the flights was went through Dallas airspace near the big Dallas airport. And the tracking aircraft called the air traffic controllers and said, well, we're following this bird and we'd like permission to fly through restricted airspace. And

they actually, the air traffic controllers, actually routed jet traffic away from the whooping cranes in that particular situation.

Tom Stehn [01:35:33] There have been a few documented airplane strikes with the loss of whooping cranes. Doesn't happen very often, apparently. But there have been documented instances. So one more, one more threat as we, if we're building more airplanes and there's more air traffic in the flyway.

David Todd [01:35:51] Gosh, it's such a delicate and complex kind of situation, from black mangroves to airplanes and wind turbines.

Tom Stehn [01:36:03] It is.

David Todd [01:36:03] Thank you so much for walking us through it story.

Tom Stehn [01:36:06] It is THE wildlife conservation success story in the United States of all species. But like you say, there's all these threats. So that man has to, has to stay wary. He has to keep working. It's not something we can walk away from and forget about. So if, if you want Texans to see whooping cranes in 200 years, there's going to, a lot of work has to be done.

David Todd [01:36:33] More work to be done. We'll thank you for so many years of working on the birds and for explaining it to us today. It's really nice to visit with you.

Tom Stehn [01:36:42] Great. My absolute pleasure. It's been a absolutely rewarding career and I've enjoyed every minute of it.

David Todd [01:36:50] All right. Well, thank you. And I hope you have a good windsurf very soon.

Tom Stehn [01:36:55] We will try. Great. Thank you, David.

David Todd [01:36:58] Thank you. Thank you for your time. Appreciate it. Bye now.

Tom Stehn [01:37:01] Bye-Bye.