

S2E3: Watersheds: Whooping Cranes Go To Court

The Gulf Podcast

Last Time

<<slow string/piano music fades in¹>>

[Dr. Paul Montagna]: Last time on The Gulf Podcast.

[Dr. Dale Gawlik]: The whooping crane is really a neat story from a conservation perspective because, you know, it's this really charismatic bird. It stands in five feet tall. It's white. It's got this red crest and really interesting behaviors and people like it because it's monogamous and it seems to have a lot of the values that people like, right? It takes care of its young for a long time, they're fiercely protective. So, really interesting birds from that perspective. They have historically wintered on the Gulf Coast and, over time, their numbers dwindled as we converted prairies to agriculture fields, and we hunted them before they were protected in the early 1900s. <<music fades out>>

<<a few musical notes as a short interlude²>>

Introduction: Downstream Consequences

[Dr. Jen Brown]: Hi listeners, that is Jen, thanks for tuning in! Today on The Gulf Podcast, whooping cranes go to court!

We live on the coast so we are downstream from everything. That also means that we're downstream from many of the water management decisions that affect us. These decisions can impact everyone who relies on estuaries and freshwater inflow, including whooping cranes. And in times of drought, things can get bad. On today's episode, we're going to dive into a court case that's about a decade old called *The Aransas Project v. Bryan Shaw, et al.* It's an interesting case that connected water and whooping crane populations—and showed how many people on the coast stepped up to help the cranes.

Before I get into that, I want to let you know that the Watersheds series is made possible by the Harte Research Institute for Gulf of Mexico Studies at Texas A&M University-Corpus Christi. Harte integrates marine science with expertise in policy, social sciences, and economics and brings together leading minds across the United States, Mexico and Cuba. The views and

¹ Lee Rosevere, "Going Home," *Music for Podcasts – The Complete Collection*, April 6, 2021, <https://leerosevere.bandcamp.com/track/going-home-2>. This song is licensed under a Creative Commons attribution license (CC-BY).

² Lee Rosevere, "Curiosity," *Music for Podcasts – The Complete Collection*, April 6, 2021, <https://leerosevere.bandcamp.com/track/curiosity-2>. This song is licensed under a Creative Commons attribution license (CC-BY).

opinions expressed on this podcast, however, may not represent the views and opinions of the Harte Research Institute or Texas A&M University-Corpus Christi.

<<musical interlude³>>

[Brown]: On the last episode, we learned about the Aransas/Wood Buffalo whooping cranes who winter on Texas Gulf Coast. They are the last remaining wild population in North America. During the second half of the twentieth century, they slowly started their long flight back from the brink of extinction. Their numbers improved from only a couple dozen birds to hundreds. Whooping cranes were still endangered, but recovery was taking place.

But then, disaster struck. In the winter of 2008, during a drought, twenty-three whooping cranes died.⁴ That was almost ten percent of their entire population at the time. Such a decline was devastating for a species in which crane pairs usually only produce one chick per year.

The dead cranes were emaciated and many people believed the cranes starved to death. The lack of water set aside for the coast meant fresh water wasn't making it to marshlands and bays where whooping cranes spend the winter. That led to a rise in salinity, which caused a decline in blue crabs and wolfberries and other foods.

[Montagna]: And a lot of people were suspecting that the problem was the way we managed water during droughts. Remember what I said, in Texas, if there's a drought, the bay doesn't get any water because we have a pass-through philosophy, not a release philosophy, and so a group called The Aransas Project, t-a-p, TAP decided to sue the state and the Guadalupe-Blanco River Authority because they mismanaged the system under the Endangered Species Act.

Chapter One: *The Aransas Project v. Bryan Shaw, Et Al.*

[Brown]: Under the Endangered Species Act—which, by the way, turned fifty years old in 2023—it is illegal to quote unquote “take” endangered species. According to the law, you cannot “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”⁵

So when the cranes died, a group of local citizens, business owners, and ranchers got together and created TAP. These folks lived on the coast and they liked whooping cranes and they understood the cranes' importance to the local economy.⁶ They hired a well-known

³ Lee Rosevere, “Curiosity.”

⁴ *The Aransas Project v. Bryan Shaw, Et Al.*, 775 F. 3d 641, 645, Court of Appeals, Fifth Circuit (2014).

⁵ See <https://esa50.org/>.

⁶ As Jim Blackburn explained it: “Although the suit was filed under the Endangered Species Act over the deaths of the cranes, TAP was widely supported in Aransas County because of the negative economic effects associated with significantly reduced freshwater inflows. During the same period that the cranes died, recreational and commercial fishing suffered badly, vacation home rentals and home sales decreased, and retail business was way down. When bay productivity is harmed, the coastal economy suffers, creating a powerful alliance between economy and

environmental lawyer named Jim Blackburn. Blackburn's also a poet and a naturalist. He has a way with words, humorous observations, and he has been writing about the coast for years.⁷

[Blackburn]: I was raised in South Texas in the Rio Grande Valley by parents from Central Louisiana, and my mother was a little bit like a, I think she always felt like she lived in a foreign land in South Texas, and always drug us back to Central Louisiana for every holiday, and so I learned to hunt and fish not only from my dad but also from my uncles in Central Louisiana and got real comfortable with the bayous and with the swamps of Central Louisiana, but I also learned the outdoors in South Texas.

[Brown]: Coming of age in the outdoors led Blackburn to eventually study environmental law at a time when there were few environmental laws and fewer environmental law classes. By 2008, when the whooping cranes died, he was already involved in water cases in the area.

[Blackburn]: Well, the whooping crane case came out of a water dispute on the Guadalupe River. I was hired by a large ranching family because they woke up one day and the front page of the *Victoria Advocate* had identified several dam sites and three major groundwater withdrawal areas that were part of a project to pump water back up to San Antonio, and the projects, many of those projects were on their ranch, and nobody had even told them that they were getting ready to happen. So, I was brought in...and in the process of fighting the water problems, the nuclear plant was proposed that was going to be nearby, and it was also going to take a lot of water, and so ultimately, we got into the whooping crane issue...then we got to the 2008 winter and twenty-three whooping cranes died, and it was linked to the absence of freshwater inflow. So, we found a correlation between lack of inflow and whooping crane mortality, and whooping crane mortality violates the Endangered Species Act. So, we started to combine that issue with our opposition to the nuclear power plant, our opposition to the dam projects near the Guadalupe River, which would be taking Guadalupe River water, and ultimately coming out of that, was the filing of the whooping crane endangered species litigation against the state of Texas officials in 2011.

[Brown]: That led to the court case *TAP v. Shaw*. The case went to US District Court in Corpus Christi, Judge Janis Jack presiding.

[Blackburn]: Um, we had six lawyers. When we got into the court room the first day, I think there were twenty-four lawyers on the other side. We had stirred up a hornet's nest. We sued the Commissioners of the Texas Commission on Environmental Quality for their water management policies on the Guadalupe River and, by implication, we were challenging, or they understood it to be a challenge, to their water management policies for the state of Texas.

ecology." Blackburn, *A Texas Plan for the Texas Coast* (College Station: Texas A&M University Press, 2017), 189–190.

⁷ See, among others, Jim Blackburn, *The Book of Texas Bays* (College Station: Texas A&M University Press, 2004) and *A Texas Plan for the Texas Coast*.

[Brown]: Because TAP couldn't directly go after state agencies, they had to get creative.

[Blackburn]: I couldn't sue TCEQ itself. We had to sue the officials in their official capacity, and we sued the executive director in his official capacity, and a person called the water master who had control over water withdrawals on the Guadalupe. We sued them in their official capacity, and I don't think a lawsuit like that had ever been filed before. And part of the strategy I developed over the years as an environmental lawyer was to try to find pathways that no one else had gone down because the other side doesn't have a blueprint of how to respond, and so that actually served us quite well in this case.

[Brown]: Blackburn then put together a team of expert scientists and policy makers to help prove the case.

[Blackburn]: I know some very good scientists from my work at Rice University. I worked with Dr. Ron Sass who was the head of the Ecology Department at Rice for many years, worked with Dr. Kathy Ensor who was head of the Statistics Department. We put analyses together of the flows over the years, and we showed that when the flows were low, whooping crane mortality went up. That alone isn't enough. I also over the years have worked with a lot of computer modelers, so we put together computer models of freshwater inflow and had a wonderful witness from Harte Research Institute and A&M-Corpus Christi, Dr. Paul Montagna, and Paul was able to link the computer models reduction of flows, which we proved, and we proved salinity changes, and Paul was able to come in and talk about the need of blue crabs for a certain range of salinity, and that when we fell below this certain range, the number of blue crabs just drop off precipitously, and that became pretty good evidence.

[Montagna]: This seemed to be an inflow issue and I was asked if I could testify on what effect inflow has on bay health and bay ecology (laughs), and I was glad to do it...my view is that the role of science is to provide the best technical information in an unbiased way, and it doesn't matter whether it was the whooping crane people who wanted to use my data or if it was the defendant, the state, who wanted to use my data (laughs)...So, they provided their own experts who had different views than I had, but all the experts they provided didn't study in this region, and they didn't know this region very well, and some of them were clearly, didn't know as much about the system as they probably should of before they were testifying in my view (both laugh).

[Brown]: That's Dr. Paul Montagna from the Harte Research Institute for Gulf of Mexico Studies. He's been our guide for the Watersheds series. As an expert on coastal ecosystems and freshwater inflow, he testified in the *TAP v. Shaw* case.

[Montagna]: Uh, we also looked at how the crab population might be doing during droughts, and we were able to demonstrate that, yeah, there's definitely a big reduction in potential prey. So, for the whooping crane, a lack of water created two problems. One was a lack of literally drinking water. They rely on the little ponds to drink, and so their habitat quality was degrading, but the second thing was their food sources were scarcer as well, so it was those

two things that we primarily were able to demonstrate. To this day, I still believe that it probably was the drought that killed those birds. The bird population had been increasing steadily from, oh, I guess as early as the 1940s and '50s (laughs), and there hadn't been a large drop off like that previously, so I think the data indicating it was due to the drought is pretty strong.

[Brown]: During the trial, the key witness was Tom Stehn, the biologist and crane expert who worked at the Aransas National Wildlife Refuge for almost three decades. Both sides wanted him to testify.

[Blackburn]: Tom was the refuge manager for whooping cranes. And so, every year he would do flyovers of the whooping cranes, and it turns out whooping cranes are really fascinating. They have defined territories, and the same pair come back to the same territories year after year, and they have bands that marked the birds over the years, and they can keep track of it. The various families have names, and Tom had mapped out every pair, if they had a juvenile or even a pair of twins with them, he had all that information mapped out at the beginning of 2008. And then as we began losing birds, he identified every bird that was missing, but we didn't have Tom to testify because Fish and Wildlife Service denied us access to him. So, Judge Jack asked us early in the trial why don't we have Mr. Stehn, and I was, you know, both the defense and I responded that, "Well, we tried to, but Fish and Wildlife Services denied us permission," and Judge Jack said, "Well, I can issue a subpoena," and turned out Tom had recently retired from Fish and Wildlife Service...and I got to put Tom on as one of our expert witnesses, and it's really frightening for a lawyer to put on an expert that you've never deposed (Brown laughs), you've never talked to, but again, we were just trying to get the information in front of the court, and we served Tom with a subpoena when he was in a hot tub at his home (Brown laughs). It was one of the more humorous moments, and he was fabulous, I mean Judge Jack was riveted.

[Brown]: So Stehn got out of hot tub and got on the stand. When he testified, he said he actually believed that more than twenty-three cranes died in 2008, but it was harder to track the juveniles so he stuck with the number that was more certain. And as to the cause of death? Stehn believed it was drought because there were not a lot of blue crabs or wolfberries that winter. Both sides questioned him, and it was kind of funny, because, yeah, Stehn rhymes with "crane" so sometimes during his testimony, the lawyers would accidentally call him Mr. Crane. Stehn was probably the top expert, but the TAP team also put other water and wildlife experts on the stand. And the defendants had their own experts who testified that it wasn't the drought that killed the cranes. One even tried to claim that whooping cranes didn't need to drink fresh water. When pressed by the judge, he admitted he made it up.⁸

After all the witnesses finished, each side filed briefs, and Judge Jack took over a year to pour over the materials. She even watched ninety hours of video showing cranes feeding. And in

⁸ Michael Berryhill, "Crane Man," *Texas Monthly* 40, no. 8 (Aug. 2012): <https://www.texasmonthly.com/articles/crane-man/>.

March 2013, Jack ruled in favor of TAP and the whooping cranes and ordered actions that would lead to the creation of a Habitat Conservation Plan.⁹

[Blackburn]: Judge Jack really, I think, appreciated the quality of the experts, and so once again I would tell you strategy wise, get the best experts you could get that have integrity and scientific knowledge and let them talk to the judge, and that's what we did. She was not impressed with the defense put on by the state. In her a hundred-fifty-page written opinion, she ripped it apart. Bottom line, she wrote a fabulous decision on our part.

[Montagna]: I remember reading the opinion and I was stunned. I mean it was a great dissertation. That judge was able to take all the complex scientific information and synthesize it in a very clear way and in a way that supported the claim that it was the drought and the mismanagement of the water system that caused the death of the cranes, that's considered a taking on the Endangered Species Act, but it was fun (both laugh).

<<musical interlude¹⁰>>

Chapter Three: The Fifth Circuit

[Brown]: Before both sides could create the Habitat Conservation Plan, the defendants appealed and the case went to the intimidating Fifth Circuit Court.

[Blackburn]: We knew the Fifth Circuit was going to be tough.

[Brown]: As Jim Blackburn prepared for an uphill battle, he turned to poetry in the stressful moments beforehand.

<<slow string/piano music fades in¹¹>>

[Blackburn]: "The Ruby-Throated Hummingbird."

At my law office
Planning defense of the whooper
Before the Fifth Circuit Court of Appeals
In New Orleans.

I can feel the fear
Working the edges of my consciousness,
Looking for my weakness,
Looking for points of vulnerability,

⁹ *The Aransas Project v. Bryan Shaw, Et Al.*, 930 F. Supp. 2d 716, 725, US District Court, Southern District of Texas, Corpus Christi Division (2013).

¹⁰ Lee Rosevere, "Curiosity."

¹¹ Lee Rosevere, "Going Home."

Looking for the points of entry
Into the essence of me.

To fight the fear
I accept that it exists,
That it is real,
Much like the fear
That the tiny hummingbird must feel
As it strikes off to fly
Across the Gulf of Mexico
To complete its migration,
To complete its life.

I smile to myself.
Why do I let fear bother me
When it doesn't stop my little friend?
It is simply another obstacle
That I must accept and defeat

And so I start on my migration
To the banks of the Mississippi
To the Fifth Circuit Court of Appeals
To continue my quest
to protect the Whooping Crane.

That is "The Ruby-Throated Hummingbird."

<<music fades out>>

[Blackburn]: The Fifth Circuit Court of Appeals is a very formidable place. When you walk into the Fifth Circuit, you realize that you're walking into a place of power. Uh, the long hallways where your footsteps kind of echo as you walk down with piles and, you know, it's a massive building, and you go into this small, little—it actually seems to be a small courtroom for the immensity of the rest of the building, and they have red light, green lights. It's hot and very tense, and I mean, we spent a lot of time preparing...I probably made the best argument I've ever made in my life. The other side was first rate, the Guadalupe-Blanco River Authority changed law firms and brought Baker Botts from Houston in, and Molly Cagle is one of the best lawyers I've ever been up against, and Molly put an excellent team together, and, I mean, it was a heavyweight fight. Judge Edith Jones was in there just, you know, she wasn't necessarily a referee, I think she had an opinion. But she was acid tongued, she is smart, and was pushing me with everything she had, and you know, it was the highest quality legal proceeding I'd ever been involved in.

[Brown]: At the Fifth Circuit, the questions and the ruling came down to what's called "proximate causation." In other words, what caused the death of the cranes.

[Blackburn]: I think really that she was most concerned about the linkages, the causation linkages, going from the state of Texas issuing permits to water being pulled out of the river to that diminishing freshwater inflow, which caused the salinity increase, which then led to a decline in blue crab, which then led to twenty-three deaths of whooping cranes, but we only had two bodies to work with, and there were, um, analyses made of those bodies and starvation was one of the elements that was identified as the cause of death, but there were others. So there was probably six specific steps. Now, Judge Jack had found that was sufficient for her to find proximate causation. Judge Jones was not nearly as convinced, and so she really wrote a decision that was fact-finding. The Court of Appeals is not supposed to be engaged in fact-finding, but hers was more of a fact-finding opinion than a legal.

[Brown]: The Fifth Circuit ended up reversing the judgment of the District Court and the conclusion from Judge Jones focused on the causes of death.¹²

[Blackburn]: And her ruling was incredibly narrow to the point that the Supreme Court didn't review it. Although, we had a motion for rehearing at the Fifth Circuit, and we got four votes that the Fifth Circuit had over exceeded its authority, but there were eleven on the other side, so we didn't prevail in that motion for rehearing but, again, it was a hard fight all the way. Um, the Fifth Circuit is the hardest circuit court of appeals at the federal level in the United States for environmental cases. They are not inclined to be receptive, and potentially the result from this case could have had incredible implications for water rights throughout the state of Texas. Among other things, the policy argument that was being made was the state of Texas could not withstand this type of challenge to its authority over water. That was not a legal winner, but it might have been a political winner. Do not doubt for a second that politics are involved in some decisions that don't mention politics.

<<musical interlude¹³>>

Conclusion: A Loss Becomes a Win

[Brown]: *TAP v. Shaw* could have been an important victory for endangered species who need fresh water to survive. It was a loss, though, that turned out to be a win.

[Blackburn]: And, of course, we were despondent. Then I got a call from the other side, from the Guadalupe-Blanco River Authority, which was an intervener, and they said, "Why don't we talk about doing something different," and it turned out we reached what I would call a settlement agreement, that we would work together to try to solve this problem. That head of GBRA retired, and the current head of GBRA came in, and we did a second agreement, and today, Nathan Pence is leading for GBRA an attempt to put together a habitat conservation plan

¹² *The Aransas Project v. Bryan Shaw, Et Al.*, 775 F. 3d 641, 645, Court of Appeals, Fifth Circuit (2014).

¹³ Lee Rosevere, "Curiosity."

under the Endangered Species Act that not only covers whooping cranes, but that covers a number of the shellfish species, the mussels in the Guadalupe River that are now endangered. They may include the golden-cheeked warbler, some of the salamanders, and it's probably the most progressive thing that any river authority in Texas has ever done environmentally, and that comes out of the settlement that we ended up making out of the whooping crane case, and so a great victory, which turned into just a nas—you know, a horrible defeat, ended up leading to something very positive.

[Brown]: Both sides had to find common ground, Blackburn said, in the process of putting together a settlement agreement. The agreement will hopefully ensure endangered species have enough water in the future.

[Blackburn]: And to me, that's one of my most rewarding cases, not because I won, but because we ended up with an outcome that everyone could work with. I was told later that if we—if Judge Jack's decision had stayed, we would be in fights for the next twenty, thirty years over these issues. It's interesting, to some extent, it was much easier to make peace after a horrible war, but where the other side wasn't forced to come in under a flag of defeat, but where they could come in from an efface standpoint and make it their choice to change as opposed to being ordered to change, and there's some interesting insight that comes out of that experience, but that's the whooping crane case.

[Brown]: The whole process had Jim Blackburn thinking about bringing people together.

[Blackburn]: It was financed by a very conservative ranching family, and I think that one of the things I've learned from this case and from others is that there are people who are fabulous stewards of the earth who otherwise we may not agree politically...It seems like everything is about blues and reds and divisions and how much we don't like each other, and there's so much common ground, and I think we found common ground coming out of that whooping crane case that people would have never thought we would...I love a concept of the radical center. The idea that the societal changes that we need are not going to come from the far left or the far right, but will explode out of the center, and that's a lot of where I've been working all of these years, and a lot of what I've learned as a lawyer is that, that center's important, and I've tried to keep an eye on it. I'm often times called a radical, and I am radical, but I may be radical at the center as opposed to at the edges.

[Brown]: I love that and I love the idea of finding common ground. But, you know, this is a podcast on the Gulf of Mexico so the "ground" metaphor doesn't quite fit and that brings to mind a quote from the science fiction writer and avid scuba diver Arthur C. Clarke. He once observed that, "How inappropriate to call this Planet Earth when it is quite clearly Ocean."¹⁴

So if we can come together and find common water or common ocean, we can enjoy the benefits of working together. That also means we all must start thinking about the downstream

¹⁴ Quoted in Helen M. Rozwadowski, *Vast Expanses: A History of the Oceans* (London: Reaktion Books, 2018), 216.

consequences of our actions. Luckily, in another happy ending, whooping cranes are doing a little better since the *TAP v. Shaw* case. Here's Dr. Dale Gawlik [pronounced Gav-lik] from the last episode to give us an update.

[Gawlik]: Whooping crane populations have been steadily increasing since the bird was listed as endangered and that's very exciting, and it's honestly one of the best examples of how the Endangered Species Act has worked successfully. They're, as I said, not a fast-reproducing animal so the increase has been slow but it's been steady, and so now we have in the wild population, the Aransas-Wood Buffalo population, 543 or so birds and another two hundred or so in the introduced populations cumulatively so that's several populations, so we're upwards of seven hundred birds in the wild at the moment.

[Brown]: It's a great trend that we can maintain if we protect the habitat—including fresh water—and the birds themselves.

[Gawlik]: Looking forward into what we can do to improve whooping crane populations, there's going to be two things you pretty much always have to do. I don't see a way around, is you're going to have to identify and protect the habitat the birds are in. So, for the migratory birds you have to identify where they're stopping because those are usually very fixed, specific places that offer the right habitat, where they're wintering and then where they're breeding, um, so those three kinds of habitats need to be identified and protected. And then for the non-breeding birds, trying to understand which marshes are the most important and protect those, so that's one element of management that will probably always be there. The second is protecting them from incidental take by hunters, or deliberate in a few unfortunate cases, so keeping the birds from being shot accidentally or intentionally. They're a species that doesn't have high reproductive potential, that is it can't produce a lot of offspring quickly so mortality in the adults has a really big effect on the population.

<<musical interlude¹⁵>>

Credits and Disclaimer

[Brown]: That's it for today's episode, but I hope to see you all out birding soon! You can read episode scripts and see my list of sources on The Gulf Podcast website as well as follow the podcast on Instagram and Facebook for the latest updates. Thanks to Jim Blackburn, Paul Montagna, and Dale Gawlik for the interviews, thanks to Lee Rosevere for the music, and thanks Alyssa Lucas for helping as my student production assistant.

Next Time

[Montagna]: Next time on The Gulf Podcast.

¹⁵ Lee Rosevere, "Curiosity."

[Eric Kern]: And we got probably ten or fifteen miles down the King Ranch shoreline...all of a sudden, we come across a line and the water turns yellow, orange. They called it brown tide, but it looked almost orange to me.

Bibliography

Allen, Robert Porter. *On the Trail of Vanishing Birds*. New York: McGraw-Hill, 1957.

The Aransas Project v. Bryan Shaw, Et Al., 930 F. Supp. 2d 716, 725, US District Court, Southern District of Texas, Corpus Christi Division (2013).

The Aransas Project v. Bryan Shaw, Et Al., 775 F. 3d 641, 645, Court of Appeals, Fifth Circuit (2014).

Berryhill, Michael. "Crane Man." *Texas Monthly* 40, no. 8 (Aug. 2012):
<https://www.texasmonthly.com/articles/crane-man/>.

Blackburn, Jim. *A Texas Plan for the Texas Coast*. College Station: Texas A&M University Press, 2017.

Blackburn, Jim. *The Book of Texas Bays*. College Station: Texas A&M University Press, 2004.

Darnell, Rezneat. *The American Sea: A Natural History of the Gulf of Mexico*. College Station: Texas A&M University Press, 2015.

Doughty, Robin W. *Return of the Whooping Crane*. Austin: University of Texas Press, 1989.

Kaska, Kathleen. *The Man Who Saved the Whooping Crane: The Robert Porter Allen Story*. Gainesville: University Press of Florida, 2012.

McNulty, Faith. *The Whooping Crane: The Bird That Defies Extinction*. New York: E. P. Dutton, 1966.

Miller, Brett A. "Come and 'Take' It: Whooping Cranes, Texas Water Rights, Endangered Species Act Liability, and Reconciling Ecological Scientific Testimony Within the Context of Proximate Causation." *UCLA Journal of Environmental Law and Policy* 34, no. 1 (2016): 99-155.

Pearse, Aaron T., Matt Rabbe, Lara M. Juliusson, Mark T. Bidwell, Lea Craig-Moore, David A. Brandt, and Wade Harrell. "Delineating and identifying long-term changes in the

whooping crane (*Grus americana*) migration corridor." *PLoS ONE* 13, no. 2 (Feb. 2018): 1–15.

Reagan, Brian. "Aransas Project v. Shaw: The Fifth Circuit's Incorrect and Attenuated Proximate Cause Analysis on What Killed the Whooping Crane." *William and Mary Environmental Law and Policy Review* 40, no. 3 (2016): 943-963.

Rozwadowski, Helen M. *Vast Expanses: A History of the Oceans*. London: Reaktion Books, 2018.