Podcast-S1E5-Hippos and Hyacinth_mixdown

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SPEAKERS

Jay Ferrell, Christine Krebs

C Christine Krebs 00:13

All right, everyone, welcome back to Working in the Weeds. It's me, Christine Krebbs the education and training specialists out here at the Center for Aquatic and Invasive Plants. And with me today, like always for season one is Dr. Ferrell.

J Jay Ferrell 00:25

Well, I'm glad to be here, Christine. This is gonna be a fun episode. We've been talking about this for weeks, and I'm really looking forward to getting into this crazy story.

C Christine Krebs 00:32

Yeah, let's just dive in and see where it goes. As Americans across the nation were growing hungrier and problematic plants were growing out of control, particularly in Louisiana, Mississippi, and Florida, a few charismatic leaders collided and collaborated just at the right time about an idea to import hippos from the plains of Africa to the lakes and swamps of the American South. That's right. You heard me right. Hippos. An animal, that would be the answer to both of these issues. The idea was so well liked that it actually made its way up to the US House of Representatives in the form of a bill, the American hippo bill that is. And before we really dive into this story, the American Hippo Bill, also officially known as HR 23261, is a bill that was written to appropriate specifically $250,000, during the early 1900s, to start on the importation of useful and new animals into the United States. Specifically 30 species of animals that they kind of had their eye on. And yeah, there's a lot to unpack in this story, Dr. Ferrell.

J Jay Ferrell 01:35

This is a wild one. I remember hearing about this probably 10 or 15 years ago, and I've never really looked into it because it's so audacious and weird. I just never took the time but this was the discussion to bring in hippos as a bio control for water hyacinth. This truly did happen.

There was a hearing in Congress to bring hippos into the Mississippi River basin for plant management. And as I read into this, it wasn't just hippos, it was 30 other species, we were talking about importing all of these big mammals from Africa to the US. I mean, believe it or not, this was truly considered and was very close to being a reality.

C Christine Krebs 02:16

And biological control, for our listeners, can be insects, fish, or pathogens, and then I guess in this case, in the 1900s, they were considering hippos.

J Jay Ferrell 02:25

A big mammal

C Christine Krebs 02:26

Yeah, to, again, right any sort of species that can then help and control target a specific invasive species that we want to get control of right. So a natural enemy, so to speak. Introducing a natural enemy to help manage an invasive species. First, I kind of want to connect this with our green menace episode, right? Because we just published those episodes, those podcast episodes are out. And our listeners are probably think, "okay, we got the history of Florida and water hyacinth and now we're talking about hippos in the United States?" What was going on during this time? Right? We're in the early early 1900s. Right now with this story?

J Jay Ferrell 02:58

Absolutely. If you go back and listen to the green menace episode, it was from the late 1890s, up until the 1940s. Well, this is around 1910. So just as we described, those plants are rampaging across Florida. They were going across Mississippi and Louisiana, causing all sorts of issues just like they were in this state. So this Hippo Bill was really an interesting time in history where four things all aligned at one time. So why else would something this crazy make itself all the way to Congress? So you had these plants were taking over. Number two, you had unprecedented immigration into the US. We're at the tail end of the Industrial Revolution. There's all of this work and people are pouring into the US. Meanwhile, cattle production numbers are plummeting. Because we're running out of pasture because we've already conquered the West, the pastures have been degraded, cattle numbers are going down, food prices are going up. So we've got plants, we've got too few animals to eat, so we need more meat. Well, what do we do where we look? Well, at the same time, Teddy Roosevelt is the famous Hunter. He's going all over Africa, and people were intrigued with Africa, it was a big deal. There were even Broadway productions where people would come in show slides of all of these different animals and indigenous peoples, and give two hour long productions on how cool Africa was. So we were enchanted. We see these massive, awesome, cool looking hippos. Well, why wouldn't we bring some of those over here to help out with the meat shortage? So it's not a terrible idea, right? But then how do you make this happen? Well, you make it happen when you bring in three of the most quirky, unbelievable, amazing people, one of which is a congressman, energize these ideas and push it all the way to Washington.

C Christine Krebs 04:57

Yeah, so really, these stories kind of overlap and have a lot to do with each other, right? Because it's about manmade problems and striving to seek manmade solutions during a time when science was kind of becoming one of its own as well. Right. And society was growing prolifically. So super interesting to see how these stories kind of connect. We want our listeners to hear that. But can you tell us a little bit more about these three main charismatic leaders that pushed this plan to become a reality?

J Jay Ferrell 05:23

Absolutely, there's these three guys that are just sort of like dropped out of space, right? They were three the most unique individuals you'll ever imagine. One of the primary characters is a guy named Frederick Burnham. They say that this is who Indiana Jones was based after he's like the coolest, most debonair guy, he was a scout, he could live out on his own, he could make war, he was a poet. The guy was just unbelievable. And he had been a scout in the American West and was so famous that the British government actually hired him to be part of a military effort in Africa. So that's where he got connected with that continent. There's another guy named Fritz Duquesne. And he was on the other side of the war during that, and he and Burnham hated each other, and were actually hunting each other and trying to kill each other. But then they get brought together in this great African animal deal in Congress and become allies, believe it or not, but who brought them together? Always is a politician, right. We had a guy named Robert Bussard, larger than life personality, all of his constituents called him cousin Bob, because he was one of them. He spoke their language, there was even a cigar named cousin Bob, that's how famous that guy was. He starts connecting these pieces, he smells a political opportunity. And he says, "these water, hyacinths are killing my constituents, if I can figure out a way to feed a hungry nation, and get rid of water hyacinth, this will take me right to the White House." So he starts connecting these people that were unlikely allies, and he carries them all the way to Congress. They end up in Congress, and they were before a House Subcommittee. So this bill never made it up for a vote. So it made it to a subcommittee, and they were trying to convince Congress to appropriate $250,000 to bring in I believe it was 30 different animals.

C Christine Krebs 07:27

Okay and just for our listeners, $250,000 during the early 1900s. Right, so let's put some perspective on that request. How much would $250,000 in the 1900s be today?

J Jay Ferrell 07:38

Do you ever take seven and a half million?

C Christine Krebs 07:39

Yeah, so a solid chunk of change to start moving about what'd you say? 30 Different species

primarily from Africa over to the United States.

J Jay Ferrell 07:46

Right. So Burnham, and Duquesne, were saying, "hey, these are great animals. We know them. We've been in South Africa, we're familiar with them. We know exactly how they operate. And they'll come right and you can move a hippopotamus right into the swamps of Louisiana, no problem, they're gonna feel right at home." But also, at the same time, Roosevelt had set aside all of this parkland, in the west, in Arizona, and in these drier parts. Again, we need meat and they said, "why not bring in camels, and giraffes and antelopes, and all of these other 30 different species? And they just go out and on this government land that nobody's using anyway, there's no pasture there. So let's take advantage of all of this space, what could possibly go wrong?"

C Christine Krebs 08:34

And I think that that kind of leads into my next question, when I started reading this, I was like, if you want to be frank, I mean, the audacity to think that you can just move things around like that, without much consequence. But really, I think it's important to understand why this idea was seriously considered back then. And so in the article, which we have linked in our show notes, if you guys are interested, it's the Atavist article written by Jon Mooallem. He writes that this kind of idea was not that crazy back then, because it was kind of a symbol of, quote, unquote, American greatness back then. Right. So if you consider this is what he writes in the article, "Burnham's generation had seen the railroad get synced across the wild landscape like a bridle, and near the solid swarms of Buffalo and passenger pigeons get erased. America had dynamited fish out of rivers, dredged waterways, felled and burned forests and peeled silver from the raw wreckage of what once had been mountains. In short, the same industriousness that had allowed America to snatch the continents natural resources and snuff out its beauty could also be deployed now more pragmatically to restock it." So not that crazy of an idea, right?

J Jay Ferrell 09:40

Basically, we're riding high as a nation. There's nothing we can't do. We put the transcontinental railroad through the Sierra Nevada Mountains for crying out loud. If we can cut through mountains, we can handle these plants. We can handle these animals. There's nothing to it right? But then you compound on that, people are saying, "well, guys, we've been doing this for the last few 100 years." Cows. They're European. They're not from America. Neither are pigs. They had recently taken Russian reindeer and stocked them in Alaska for the native peoples up there. There were people in California that were raising ostriches in ostrich farms. So we've already been moving these animals around, we've been doing this stuff they're like, "so if we can do those, why can't we do 30 more?"

C Christine Krebs 10:34

Another part of it was not only would it work out or play out in the environment, so to speak, right, those serious considerations, but then it was coming down to actually consuming the

right, those serious considerations, but then it was coming down to actually consuming the animal at all right? Coming to the terms of the fact that I am eating a hippo, right? That's kind of also the conversation that people were having.

J Jay Ferrell 10:50

Yeah, that was gonna be a hard mental hurdle. So there was a marketing campaign. What were they calling it?

C Christine Krebs 10:56

So these three men came together and created the new food society? And through that they called the hippo meat, "lake cow bacon."

J Jay Ferrell 11:06

Oh, that's that. Sounds better? I mean..

C Christine Krebs 11:08

Yeah like, we love bacon, right.

J Jay Ferrell 11:13

Hippo kind of looks pig-ish. So why not call it bacon, right?

C Christine Krebs 11:16

Make it more palatable to the American people. But with all seriousness, there are scientific considerations to be made when a plant or an animal is brought into a new environment. And I think that that was a lot of what Americans were kind of questioning and wondering about when this idea was brought forth. One, am I going to like it, is it going to taste good, right? But then also, what are going to be the consequences if we do decide to go ahead and introduce these animals? Right?

J Jay Ferrell 11:45

Yeah. Fortunately, there were a few congressional representatives that were at that hearing that ask some very pertinent questions. And one of the questions was, how are you going to keep the hippos where the water hyacinth are? How are you going to - these things are big, they've never had fences, how are you going to corral them and keep them corralled? And Duquesne and Burnham were not able to give really good answers they're like, "don't worry about it, trust me, it's not going to be an issue." Right? So there were some forward thinking

people saying, "before we bring these things in, we really need to consider the consequences because we don't want to make the problem worse. We're dealing with an invasive plant. Are we also going to have to now start dealing with an invasive animal?"

C Christine Krebs 12:31

A large hippopotamus at that, right? That's not some smaller - and not to downplay the smaller animals either, because they can create big impacts but this is a hippo. So I guess this brings to mind two things. One, we kind of have a sort of a case study of this example in Colombia, right?

J Jay Ferrell 12:48

Yeah. Yeah. So who was the drug czar in Colombia?

C Christine Krebs 12:53

Pablo Escobar.

J Jay Ferrell 12:54

That's him. So when you've got more money than you know what to do with you just start doing crazy things like crazy rich people do right? So he decided to build his own Zoo. He brings in four hippopotamus for his zoo, three females and one male. Well, after he was arrested and his empire had fallen, they just opened up the zoo and let things go. So those hippos just kind of moved out of the zoo and went down hung out in the river. Well, that was about 25 or 30 years ago, the population went from four to 90, and it is rapidly increasing now. And they are causing tremendous ecological harm in that area. So one of the things that's very important to talk about is would the hippos have really eaten water hyacinth anyway? Well, they don't, right, because there's water hyacinth in Colombia.

C Christine Krebs 13:47

So they don't even eat the water hyacinth?

J Jay Ferrell 13:49

They'll nibble on it, but they don't like eating in the water. What a hippo likes to do is come out of the water at night and graze on grasses, and then return back to the water during the day time for protection.

C Christine Krebs 14:03

What would Broussard have done if there was a hippo in the Louisiana Delta, and then they just

went out at night and actually ate off of the pastures and rangelands, and then went back in and just said, those are some nice flowers.

J Jay Ferrell 14:14

And even worse than that, they move back to the water, and that's where they handle their business, right. So they defecate in the water, and they contribute significantly to the nutrient load. So that river in Columbia, it used to be a very clear river. It is now greatly impaired with algae, a lot of the native plants have disappeared because there's no sunlight that can shine through all the algae. So they they stomp around in the bottom. It is very turbid now, they've dramatically changed ecology of that area of the river.

C Christine Krebs 14:52

But I really want to bring it back to this whole idea of biological control agents right because it is a management technique that we employ right invasive plant management. But it's one that's really intentional, it takes a lot of time. And there are experts around the world that dedicate years to this process, right? And so this hippo idea, although it's funny, and it's good to look back on and hopefully learn from our mistakes, but what are the considerations? And what is this look like for real now.

J Jay Ferrell 15:20

So bio control is the holy grail of invasive plant management, right. You have a sustainable insect animal that is now going out and managing this plant for you. So while everyone else is sleeping, that grass carp, or that beetle is eating that plant, they don't take a day off, they work all the time. It's a wonderful concept. They're breeding, their numbers go up. As the plant grows, population grows of the bio control. But to your point, you must have a very intentional process in place because you can release a bio control that can escape and cause more damage than it does good. So because of this, there is a very lengthy, very tightly controlled process that is all managed through USDA APHIS, that you have to really comply with and conservatively best case scenario, it takes about eight years for an insect or a bio control agent to make it through the system. In reality, it usually takes 10 years plus, and there is a massively high failure rate, because the standards are so high, and rightly so that most of the agents never make it through the program.

C Christine Krebs 16:36

Yeah, so it's a pretty prolonged process. And it's a pretty exclusive process to be a part of right. So a couple of examples that I just think of better success stories that we could share with our listeners, alligator weed flea beetle, right? That's a pretty comprehensive program that's actually run through the Army Corps now, right?

J Jay Ferrell 16:54

It is

It is.

C Christine Krebs 16:55

So it's kind of this large scale federal project because it has grown to be such a reliable, helpful biological control agent. Are there other ones that we kind of have in our toolbox right now currently that are successful?

J Jay Ferrell 17:06

The air potato beetle has been wildly successful. This is a great insect that is doing well, particularly in North and Central Florida. It is transforming how that plant used to dominate the ecology here.

C Christine Krebs 17:21

Those bio control agents, they kind of turn into their own sort of self sustaining program, right. So there's continuous monitoring, and again, right evaluating how it is playing out in the environment. So there are people involved the entire time with how this species interacts in the environment.

J Jay Ferrell 17:36

Absolutely. And there's also big time educational events that are being held, making sure people know that they can order these insects, that they can get them in the mail. If you have a population of this plant on your property, they will send them to you and help you fight the fight for them.

C Christine Krebs 17:52

So this process is a significant one. There's a lot of players involved. It takes a lot of time. And back then in the early 1900s. They were just trying to find a manmade solution to this manmade problem. And so like whatever happened to the hippo bill?

J Jay Ferrell 18:09

Yeah, so the committee asked some really probing questions, and they sort of put the brakes on it, because there wasn't a lot of confidence that these hippos weren't gonna get away and cause a problem. So basically, what happened is it got tabled, and it really never left committee. So Broussard was going to bring it back up, and he was waiting for his opportunity. But then World War One started, and there was a lot - Congress was really starting to have other issues that they were trying to figure out and deal with this war effort. So Brossard kept delaying, kept delaying re sending his bill, while he was delaying, he ends up becoming a senator. So he's seeing that this issue is really not helping him move forward. Well, finally,

World War I has ended, and Brossard has died. He died right at the end of the war, so we didn't have a champion anymore for the hippo bill. Meanwhile, the fascination from Africa was starting to wane. And what people wanted to hear was stories about Europe and stories about war, Modern Warfare. So all of those shows that people were putting on and Broadway about how cool Africa was, was replaced by stories from returning veterans. At the same time, the meat shortage had kind of been solved. Animal scientists learned how to feed animals and more nutritious feed, how to grow more animal on less land. So all of the issues that we were seeing in 1910, had sort of evaporated by 1918.

C Christine Krebs 19:44

To me, it's just a perfect picture of when society and science collide and the perfect types of people to kind of push ideas forward and kind of see them play out. And so I guess without the Hippo Bill never really did make it through. Yeah, and I'm so glad we were able to sit down and kind of share that story with you all today, because I know when we all first read it, we were just so taken aback, we knew we had to share it with you. And I think it offers some good thought into how creative scientists can be.

J Jay Ferrell 20:11

Well, and I really appreciate these guys thinking out of the box, right? When you have these big questions, we need big solutions. And Burnham and Broussard and others, they were really thinking big. How do we fix it? We bring in non native species that may be the solution, and it very well could have been. But boy, what were the unintended consequences if they were going to do that? This is a situation where before you make decisions of this large of consequence, you really need science to work through and answer these questions for you. Because not a single person that was before Congress was a scientist. So there wasn't a dedicated scientist looking at how these big animals were going to impact the ecology of the United States. So before you make these big decisions, you need science. And yes, science can be slow. Science is expensive, but it can help you avoid big issues if you use the scientific method and follow the path.

C Christine Krebs 21:14

And so with that, thank you for joining us for this episode. We really enjoyed talking through the story with you. If you want to know more about the details of this story, I highly recommend checking out our show notes. We have some awesome links in there, one of them being from the Library of Congress. They have some awesome old historical posters and documents that they have scanned in there and I've enjoyed going through them. And yeah, this rounds out season one for us. So if you haven't listened the other episodes go check those out as well. And thanks for being with us as we continue to turn science into solutions.