# Episode 99: Stephen Pyne On Humanitys Evolving Relationship ...

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**SPEAKERS**

Jack Humphrey, Stephen Pyne

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Jack Humphrey 00:00

We are now in the beginning of what the United Nations has declared to be the decade on ecosystem restoration. And this episode of The rewilding Earth podcast is sponsored by bio habitats a company dedicated to protecting and restoring ecosystems, while habitats would like you to enjoy a virtual moment with the black kite. While we talked today about the role of natural fire versus humans relationship to fire, the black kite reminds us just how natural fire is in our world. There is now evidence that black kites may actually start fires by carrying and dropping burning twigs away from the original fire. They're said to do this to then hunt escaping prey, allowing them to feed with little competition from rival predators. And well, that's just cool. You're listening to the rewilding Earth podcast. Stephen pine is a historian, urban farmer and emeritus professor at Arizona State University. He spent 15 seasons on a fire crew at the North Rim of the Grand Canyon National Park, and another three writing fire plans for the National Park Service. He's written big screen fire histories of America, Australia, Canada, Europe, including Russia, along with textbooks, popular works and a memoir of his seasons with the North Rim long shots. Today I'm talking with Steven about his book, The Pirate scene, how we created an Age of Fire. And what happens next, we start at the beginning of fire on Earth and explore human controlled fire and its effects on wild lands as well as solutions to the Fire Age, the pirate scene we find ourselves in

S Stephen Pyne 02:03

like those we live on a fire planet that uniquely fire planet, the only one we know of. And we are a uniquely fire creature, we now have a species monopoly. Over fire fire is what we do. It's our ecological signature. So for someone interested in Earth environment, and people, fire is a pretty good index of who we are. I picked up the torch along a long time ago, I spent 15 seasons on a fire crew at the North thermic Grand Canyon and got interested in fire and then eventually realized I should be writing about that. That was a topic that wasn't really being traded in the way I was taught to think about history and culture, and sort of human human behavior on the planet. And the pirate scene brings together a lot of stuff I've been writing

about for a long time, and tries to crystallize it into a kind of metaphor, if you will. In many ways, it's my answer to those people who say, the future is so dire and strange that that we have no way to connect it to the past, we have no narrative. And we have no analog. There's nothing we've had in our experience that will prepare us for the kind of strange happenings that are coming. And my sense is we have a great narrative. It's the unbroken story of humanity and fire kind of mutual assistance pact we made long ago. And I think we have an apt analogy, we're creating the fire equivalent of an ice age.

Jack Humphrey 03:48

I mean, you made the case perfectly. No, it's we're completely intertwined with all of this and to be able to say that we're in a fire age that this is a pirate scene and the Age of Fire is is you back it up. And maybe you can describe that a little bit in terms are starting with the types of fire and those kind of mind benders that you put in there that that show us just how deep this fire thing goes on this planet.

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Stephen Pyne 04:14

Sure. Well, I the fire community likes to deal with triangles fire triangle. So this is mine. And I think I can justify it. So we have three kinds of fires. Think about how fire exists on the planet now and the first fire is That is nature's fire and it's been around as long as plants have colonized continents. So we have an oxygenated atmosphere created by life in the oceans. Life when it begins colonizing the continents provides fuel. And then lightning was a primary source of ignition. So we have fossil charcoal dating back 420 million years. So fire is now It's something alien to life on Earth in many ways. It's, it's a property of, of life on Earth, life created the oxygen life created the fuels. And when the hominins appear, maybe earlier, someone came and went, but certainly, over the course of the place to save, life became a primary source of ignition as well. So what happens is that a creature or a genus, the hominids appear, who have the ability to start and use fire. And this is really a major shift in the history of fire on the planet, when I think of a second fire or anthropogenic fire. what did this mean that this creature could manipulate fire? Well, it looks like we got small gets and big heads, because we learned to cook food. And then we went to the top of the food chain, because we learned to cook landscapes. And now we become a planetary force because we began to cook the planet. So we have always used fire. We used it as an assistants for tools, but mostly for cooking. And there's a lot of evidence that says cooking, provided a lot of nutritional and caloric impact it it, it was a lever that allowed us to make the leap and become something different. The real shift is when we began to realize we don't have to rely on nature to start the fires, or to provide cooked food here and there. We can do it ourselves. So imagine a bison for example, which, which will feed preferentially on freshly burned stuff? I mean, that's clear, two years, unburned, you won't see any animals, and they might as well be eating cardboard. But what if the bison could start the fires that provided foodstuff? Well, that's in a sense, what happened with humans. So we did that. There are limits, the ability to start fires, depends, you can control time and place. But the ability to spread, which is the real power of fire to propagate depends on the environment, you have to have the right wetting and drying the right kind of stuff to burn the right winds and so forth. We began changing that when we began modifying the fuels. And for me, this is what agriculture means. We began slashing drying, we drain wetlands. All of this changes the seasonality and the geography of fire. With I think planetary consequences, were just beginning to appreciate that we have been modifying the planet and indeed the

climate for a long time. But I think the real takeoff point comes with the with the end of the last glaciation, the onset of the Holocene, because we have a fire wielding creature, very mobile, who is encountering a fire receptive world, and the to begin to interact in, in a kind of positive feedback way. So that still has limits, you know, there's only so much you can cut and dry and burn. And without, without the ecosystem collapses. And it does collapse. If you overdo it, you have to abandon it and go on. So there there are built in checks and balances. Because we're dealing with the living world living landscapes, they provide the fuel. And then we began burning what I think of as lithic landscapes that is once living now fossilized, into the form of coal, oil, natural gas, and so forth our fossil fuels. And when we began doing that, our firepower increases enormously. We put the whole process on afterburners. But it also allows us to exceed all the old checks and balances. You know, we used to have to burn by seasons, you had to burn by place. Now you can burn day and night, winter in summer, through wet or dry, it doesn't matter. We can burn constantly. So the old quest for fire had always been about finding more stuff to burn ways to burn it and uses for now that there's plenty to burn there. We keep discovering more all the time. The problem is that there's no place to put all the effluent all the byproducts even the planet is not enough the oceans are being disturbed by it. And acidified the, the atmosphere is changing, the climate is changing. In fact, our power now the great acceleration also applies to fire. Our power now is such that, for me climate history is now a sub narrative of fire history. Why is it that mega fires are a pathology of the developed world? I mean, we've got the most machinery, we've got the most intensive land pacity to change the land and alter it. We have the most science, we have all this fancy computer graphics, we've got tool. Why is it that we're having it, these are signs of a fossil fuel civilization, because it changed not only climate, it changed how we live on the land, we have found surrogates by looking to fossil fuels, for all of the living landscapes and the way we interacted before. So in some of it, it's very obvious our domestic settings and factories, office parks and so forth. Working fires are completely gone, we get it from electricity or, or natural gas, whatever. And some of this is all to the good. I mean, I'm happy that fires are not running through our cities anymore, I'm happy that I don't live in a house that filled to a smoke. But then we've kept applying this to other landscapes. The whole green revolution is basically a conversion to fossil fuels, as a substitute for the things that firewood provide an agriculture previously. And one of the things that got lost is following follow was the way you got field burning before. But the follow was where most of the biodiversity was, and provide did a ton of patchy landscapes that was very useful for for living things in general. And then we've decided we'd continue this process. And we would project that same trend out into our wild lands or public spaces. And that's where things really come unhinged, because we decided we could meet nature's fire with a counterforce by all these machines. And for a while that works, and then it doesn't, because the landscape changes, places that are have adapted to fire for very long periods of time, even over evolutionary time, become unhinged. And we they They rearrange and build up combustibles to the point where we have explosive fires where we didn't before fires that are outside the historical range of these of these habitats. And of course, we change the climate, which means that in most places we're getting we're amplifying the conditions that support large fire. But you know, the tendency up until very recently, has been well if fire is getting fires are getting larger, we need a bigger counterforce. But that's not working. Even CalFire, which has more firepower, firefighting power than California in general than anyplace else on Earth, is helpless before these really large fires. But imagine if take away all of our air tankers and helicopters, our engines and water tenders, and bulldozers and chainsaws and pumps and the roads, vehicles to carry crews and then around, could we pretend to fight fire. Of course not. This is not a city where we were what burns depends on what we build. This is what nature is providing and how we interact with it, we could not have pretended to do that we would have had to do what humans have always done, which is to manipulate that landscape to get fires that we that we can accept and live with. And to substitute our fires, in effect, tame fires for

wildfires. And when I say tame, it's not always like burning a, you know, a fallow field, or burning the stubble after you've harvested the crap. You can't control all the weather and the winds and all the quirks and nuts. This is like it's not like having a tame, cheap dog. It's more like taming a grizzly bear, or a tighter to do dress, and there's always a chance to go feral. But if you do it over very long periods of time, then it all comes into a rough accommodation. And it works. Those places that are most developed. And development essentially means converting to a fossil fuels society are the ones that have the worst fire problems.

Jack Humphrey 14:21

One of your reviewers said something about we've done all of these things that you've talked about tain and suppress fire for much of the industrial age. And now fire is rewilding itself. What did what did she mean by that? What do you mean by that?

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Stephen Pyne 14:35

Well, that's a great that's a that's a great term. I think it's that we thought we had a leash on fire and that our our ability to start fires in our machines basically was enough that we could keep fire under our control and fire has slipped that leash. It has in a sense, rewelded another way That, to think about that avoiding the wild issue is that these are feral fires. These are places that had abundant fire for very long periods of time, even under human settlement, but these fires were more or less domesticated. And if people lost control, in one way or another, let's say that a war or famine, plague, something disrupted the humans social order, so that they could no longer maintain the land and the fires appropriately, then it goes feral. You can see how this happens. But then it's really dumb that nobody anticipated that we are very effective at squashing the small fires, the nuisance fires or doing, we were very effective, introducing our own fires, control prescribed whatever you want to imagine them. But now we declared all fires as a problem. And we tried to eliminate them. And we are succeeding with all the fires, that we're probably doing some good. All the small fires, some of the intermediate fires. But what we can't control are the ones that really matter. That is the really large fires, high intensity fires, some of which are part of the natural scene, many of which no longer are. So we've created a situation where the where we've created an environment where the likely fires are going to be the ones we don't want and can't control anymore. And now, it's so far under out of our control that it's very hard to imagine how to put things back in.

Jack Humphrey 16:45

Well, I'm sure, though, that you have done some imagining. And you know that I'm going to ask you that question. I mean, well, yeah, it's tough. I don't see any, I don't see any clean way out of this situation. Because I mean, politicians are going to have to say, trust me, it's going to be bad for a while, but will will appreciate it a generation from now. I mean, that is not a campaign winning campaign slogan.

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Stephen Pyne 17:12

The American fire community really has its its origins, our wildland fire system had a kind of creation story in the great fires of 1910. And we spent 50 years afterwards, with the Forest

creation story in the great fires of 1910. And we spent 50 years afterwards, with the Forest Service's pretty much a hedge Amman trying to take all fire out of landscapes. And then in the 60s and 70s policies changed, we realized this was a mistake. And we've spent roughly 50 years trying to put good fires back in. So distinguishing, trying to distinguish between bad and good fires. What's the distinction? Bad fires or fires that kill people burn towns, trash, valued? ecosystems, good fires do the reverse. They help make healthier, more resilient habitats and so forth. One, we have a serious problem with communities being threatened by wildfires. And there's a lot of research on this. And it's pretty clear that the way to protect those communities is to focus primarily on the structures themselves. What ignites the fires are not tsunamis of flame roaring out of the countryside. But blizzards of embers, kind of a snowstorm of sparks, if you will, that swarm across and find points of vulnerability. And we have for a long time, or had for a long time, not really experienced urban fires, we thought that was a problem solved. So we built or re occupied a lot of urban communities in ways we've been recolonizing the rural landscape, but with an urban out migration, really creating excerpts. And so we're not doing things in the landscape as people in the past did that would have helped protect them from these kinds of fires. But these sparks are what began the process and then they can go ignite enough houses to overwhelm the initial response. And then it just goes as an urban fire. And you know, this is like for me, this was like watching polio, come back. You know, we fix this problem or smallpox. Well, we thought it had gone away. We don't need to vaccinate anymore. We don't need to practice sort of pirate hygiene anymore, because urban fires are not a problem. Well, they're back folks. And we need to reinstate the kinds of things we have done in the past. And in many ways what is now known as the wildland urban fire or wildland urban interface fires are really stupid, geeky term, but we're stuck with it got mystified. Death defined by the wildland fire community, which saw the problem as one of wildland fire and its management, complicated by houses. It should we should have picked up the other end of the Stick can say, you know, these are really urban enclaves. With peculiar landscaping. If you define it as an urban fire problem, it's pretty clear what you have to do, you have to do what was necessary to take fire out of our cities. And they used to burn as often as the surrounding countryside. We stop that. That's how to reinstate that's how to reconcile this problem. And I think there may be an argument for a kind of Greenbelt around and it doesn't have to be paved or nuked. It can be recreational space, it could be something that's managed, which helps to provide a little fuel brake, it won't stop fires, but it will change the character to the point where we can manage them. The second thing is to get those landscapes in shape, you know, we could do that the housing community thing, if we wanted to, we could do this in five to 10 years, we've identified the points of vulnerability, we know the most vulnerable communities, you just have to buckle down and do it. And a lot of the things that are causing problems like powerlines stuff we need to do anyway. So we don't need a trillion dollar program for fire. We need fire as a part of a lot of other infrastructure, rehabilitation and reconsidering of land use that we need to do anyway. Okay. Then the second part is the countryside, the the wild lands and public lands, if we can provide protection for the communities that will give us some space to deal with the back country. And there are lots of things that can be done, some fires can be introduced in the southeast Prescribed fire is a well established technique and a very successful one. In the West, it has not been able to operate at scale, or in complex environments. And what the agencies are doing is to manage wildfire. So we're back to our sort of tamed grizzly bear, in a sense, and they're working with wildfires, they're putting their resources to protect our high value assets, our communities, it may be dealing with smoke, it may be sequoia groves, or habitat step preserves established for endangered species, putting your resources there to protect those municipal watersheds, etc. And then pulling back to natural barriers and then burning out. And this could be over a considerable area, a lot fewer people a lot less risk to firefighters. If you do the burnouts, well, you should think of them as a kind of prescribed fire done under urgent conditions. We're not just nuking these areas, are named palming them and

just producing a deep black line. The idea is to use that fire to do a variety of things, as well as security or fire line and provide protection against the fire escaping. And this also has an advantage, this is not monitoring. It's not watching this is actively engaging, but have a different way than we think of fire fighting on an urban model. And then also put some boundaries are where the fire is going to go. But also smoke, we can't have smoke lingering in communities for three months at a time. And this put some, some borders on it. So we need to begin getting fire in and it's going to be a sloppy, messy process. We don't control all of that environment, we can do a lot. But there are going to be escapes, you know we have escaped and we have all out suppression CalFire around cities, LA County, they lose two to 3% of fires anyway, it's not possible to get much beyond that. Unless you control the entire landscape, which is what a city is, we lose probably half that from prescribed fires, we will have to accept a certain amount of that. And once we get the system into root shape, then we will be able to deal with a slop overs or escapes they will be much easier to contain. The third thing is to get control of third fire, which is to cycle off fossil fuel combustion as a source of primary power as soon as possible. And so what do we need? Which of these three do we need to do? First, we need to do them all. At the same time. They have different timetables, we can protect communities, as I say within a handful of years if we choose landscapes probably take a handful of decades. Climate change, probably going to take a couple of centuries, and thereafter we may be in the permanent business of managing climate, not just disrupting it, but that's that's a much longer range view if we just mitigate, but don't do climate change Ange, eventually our mitigation will be overwhelmed. On the other hand, if all we focus on is climate change and let wildfires run amok, particularly really damaging fires, we're gonna have a lot less to build into a recovery, we need to do them all. And if people don't feel safe in their communities, they're not going to be very tolerant of anything else you do. So that is really a high priority, legitimately a high priority

Jack Humphrey 25:26

concern fires we talk about are the ones that are closest to town, what what's really amazing if anybody looks at those maps of all the active fires in their area, somewhere in the West, in California, or New Mexico, when the really big ones are going through just recently, there are a lot of fires that nobody's talking about, like a lot. And basically that fallacy of we have this fire crew, we know how to handle it with all our machines and all this stuff. That's just the fraction of it that everyone seems concerned with. But all those other fires in the back country, are those at least doing what they're supposed to do, are they at least a little closer to natural than the ones that were fighting close to home where we've also been allowing all of the buildup to happen because we've been suppressing the small fires,

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Stephen Pyne 26:16

you're more right than wrong. And studies show that as far as communities, the fires that threatened communities start within a mile or two of the community, it's very rare to have fire start in the remote back country and then make their way in, it happens. But not very, but not very often. That gets plenty of news. So again, it's a case of looking close to home building that building protective in ways that are smart again, we don't have to trash everything. To protect ourselves, we can do this and bio friendly and even aesthetically pleasing ways. But the fires in the back country, particularly in the West, lots of it. I think in the southwest, I think the Northern Rockies, some I suspect some of the fires we saw in Northwest the Blue Mountains in

Oregon this summer. And elsewhere. Certainly in Alaska, they're managing these fires to keep them within a large box, if you will, and to protect the areas that are most threatened. Otherwise, using burnout, and how much how much of that is good fire, I think a significant fraction. I saw an example of this a few years ago, the San Carlos Apache Reservation east of Phoenix, nobody knows where they are. And the wind blows smoke away from the city. So they've got some room to maneuver. But they had an area running through the middle of the rez that they had been trying to burn for about 10 years. It was a pine step land, and then some Chaparral area around the Rams, and so forth. And they had been trying to get all the pieces lined up the funding, the studies, the equipment, the ability to call on reinforcements, if necessary, all these kinds of whatever lengthening checklists, and they couldn't do it. Then they had two lightning strikes there. And they manage those fires as a kind of confined, contained, managed wildfire thing. And they got 84,000 acres of it exactly where they wanted. And they felt that maybe about 10% of that was more severe than they wanted. They have some of the damage some of their timber that they have a tribal mill, and they lost some of that, but they were willing to trade it off. And probably another 10% didn't burn it all. Fires are patchy over large areas. And the rest of it was within the range that a prescribed fire would have been acceptable. So if they can get at 75% of that burned area, in the right kind of fire, that to their mind was a very suitable trade off. And I emphasized that they were actively managing, they were pushing and pulling these fires, they were stopping them where they didn't want them to go. And they were lighting them where they wanted to go sort of pushing and pulling and working around sort of loose hurting this fire trying to work with the fire. So I'm sorry, there's a lot we can do with this. We a lot more research, but we've got to disentangle in people's minds in the political same communities from the larger landscape.

Jack Humphrey 29:19

If you were an advisor at the right place in the right time as we were hoovering up natural areas for development for resources, mining, logging, agriculture, you might have said hey, you guys might want to slow down and reserve more of this because fire is a natural thing. And we need these some of these places don't even thrive fully unless they do burn. And most places don't. And if you don't want to lose the only one you've got, you might want to save two, three or four because a lot of the fires are now threatening places where the only leopard frog in the world is left. And it's like well did did that just says we took too much we didn't build a modern world that's taking any account for fire.

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Stephen Pyne 30:08

Yeah, I mean, we've taken out what 12 to 19% of mature sequoias in the world. I mean, this is, this is just mind boggling this, how could this happen? Yeah, you're exactly right. But you know, people as century ago, that's what they thought they were doing. They wanted to encourage all this young forest growing up, because that was the forest of the future. And they thought that they were smart enough and strong enough to keep fire out. And this was their contribution. But wonder how did they get fire so wrong? Well, they thought, we really didn't have a science of landscape fire until a few decades ago, we didn't even have a journal till about 20 years ago, the society formed about 25 years ago, for fire ecology, we really didn't have the science, foresters hated fire, because they came out of Central Europe, which has no natural basis for fire, no wet dry cycles, no dry lightning. They just saw it as a social problem, people's bad behavior. And they thought it's something that had to be eliminated before you could really

manage the land. Well, they didn't have a science of this, they just had a series of presumptions and prejudices that were common to that guild. And they assumed that they were speaking as scientists, and they weren't. And so part of the tragedy is that we lost all of the traditional knowledge from people who had lived for hundreds or 1000s of years and places, lived with fire and used fire. That was all suppressed as much as the fires were. And now we're having to recover it.

Jack Humphrey 31:40

What do you see going forward? If you've drawn a clear picture that we're kind of getting a late start here, because of our lack of understanding, really was just holding us back? How do you feel about the pirate scene? How does this go forth? Are we making progress?

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Stephen Pyne 31:56

There's certainly progress possible if we choose, we can protect communities. As I say this was a technical problem. It's about building materials, fire codes, zones, the infrastructure for urban firefighting, thinking about these as urban fires, not wildland fires that have cities in the way. These are really cities that have really strange landscaping that they haven't attended to as as Urban's that these are technical issues. They're social political issues, but they have technical solutions to keep these places from burning. We also have technical solutions for eliminating fossil fuel combustion as a primary source of power. Again, there are social, cultural, political issues. But there is a technical fix possible the the wild lands are sort of great public countryside don't have to my mind technical solutions in the same way. This is going to be a process of learning or relearning what humans have not had known for all of our existence as a species and, and apparently forgotten about as we converted to modern societies. And that's going to be sloppy, and messy and unnecessary. It's going to happen whether whether or not we do anything. As we ratchet down our burning of fossil fuels. We will be ratcheting up or burning of living landscapes. We have a huge fire deficit in most of these landscapes, and we will have more fire. I look at the amount of acres burned this year while we attend 12 million acres. You know the worst in so many decades. I see I see a fire deficit. We should have burned three or four times that much under prescribed conditions. We're not getting enough fire. We're having wildfire the worst possible kinds of fires do that burning forests with results that may not be what we want. We need a lot more fire. So we need to be cautious and thinking about taming climate change getting it back to something we still have a problem with land use and fire. And we need we will be active fire agents there in perpetuity. I would say at the end. I mean, as I look out over the long spectrum, we good fire made us and bad fire man make us Steven

Jack Humphrey 34:19

this has been enlightening making upon but it really really has and I so appreciate you coming on and giving us your take on this again. I bet you a lot of people listening had the same reaction and and certainly will once they read your book if they haven't yet. It just feels like a whole different way of looking at this than most of us have been thinking of it. Even people so so called in the business.

34:46

Hey, listen, it's been a pleasure. Thanks for having me on.

Jack Humphrey 34:51

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