

**The Grizzly Beat
Episode 19
Transcript
Dr. Brad Bergstrom
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Louisa Willcox: This is Louisa Willcox and the Grizzly Beat. And you are listening today to Dr. Brad Bergstrom, a professor at Valdosta State University who specializes in wildlife science and conservation policy. He has a wealth of experience with recovery of wolves, grizzly bears and other endangered species. Brad, maybe you can introduce yourself.

Dr. Brad Bergstrom: Well I'm professor of Biology at Georgia State University. I'm a mammalian ecologist, conservation biologist. I've done field studies of wild mammals for the past 35 years or so. I do have experience, field experience in the Rocky Mountains, not directly with carnivores. I concentrated on the small mammals, but large carnivores and endangered species, species of conservation concern have been an interest of mine for many years.

And I have for ten years, nearly ten years, I chaired the Conservation Committee of the American Society of Mammologists and helped to draft many Society position letters over those years. And we very frequently got involved in large carnivore issues because there are -- many of the large carnivores are severely threatened and endangered.

The U.S. Fish and Wildlife Service has a proposed rule to delist the population in the Greater Yellowstone Ecosystem of the grizzly bear, just that population -- what is known under the Endangered Species law as a "DPS" or Distinct Population Segment. They would leave the other sub-populations of the grizzly bear in the lower 48 states listed. And this has been a proposal that they actually passed in 2006, so grizzly bears -- they did finalize the rule and announced the delisting of that Yellowstone area population in 2006.

And then a court ruled that they did not fully consider the threats, the future threats to the survival of this population. Most notably, the severe decline in whitebark pine, which grizzly bears use as a vital winter food supply. So they were essentially relisted by the courts until today. And now the Fish and Wildlife Service has proposed that they have thoroughly examined what the court told them to examine, namely the whitebark pine, and based on their reading of the literature -- and I might say a rather selective reading of the literature -- they have determined that there is no real threat from decline of whitebark pine because there's so many other food sources that the grizzlies use.

So that's where we're at. We're back to where potentially to where we were in 2006. And Fish and Wildlife Service wants to delist this population. We'll see if they do.

LW: Brad, can you talk a bit more about delisting and the Society's role in that debate, and grizzly bear recovery more broadly?

BB: Well I do have to go back to -- the Society made a statement that the most powerful statement the Society, that is the American Society of Mammologists can make is a membership resolution. And in 2001 we did pass a members resolution, unanimously, really supporting the Fish and Wildlife Service's plan to reintroduce grizzly bears to the Selway-Bitterroot Wilderness Area in Idaho. It's a huge wilderness area that has plenty of good habitat for grizzly bears. The Service already had proposed to do it and our resolution supported that. And they still haven't done it, okay.

Fast forward 15 years. We wrote a letter in 2006, or whenever that proposed rule came out for public comment, we wrote a letter opposing the delisting at that time for many of the same reasons that we have more recently this year, 2016, explicated. Although if anything, we know in that 10 year period, we know a lot more about the threats. More threats to the future survival of grizzly bears have emerged, because the four major food resources of grizzly bears are all in decline, at least in some major parts of that range. So it's not just whitebark pine, it's the native cutthroat trout. It's the army cutworm and elk populations. All of those are in decline.

We have climate change going on. That is certain. The specific effects are uncertain of course.

And this population is isolated, especially so because the Fish and Wildlife Service refused to honor their commitment to reintroduce a population to the Selway-Bitterroot Wilderness area, which would have provided a vital dispersal link and therefore genetically connected the two significant populations that are very widely separated, that being the Northern Continental Divide Ecosystem around Glacier National Park and then Yellowstone. So without that important link dispersal link between those two major populations, that's another serious threat to the future both demographic and genetic prospects of this population.

LW: So, how would prospects for connectivity be affected by delisting?

BB: Yeah, in recent years it seems the Fish and Wildlife Service has shown a predilection for using the DPS rule, which is called the Distinct Population Segment rule, primarily only for delisting. In the past, they have mostly looked at entire taxa, so they will take an entire taxa on whether that's a full species or a subspecies -- at least an officially named subspecies -- and they will list the entire subspecies typically.

But lately, in recent years, they have used this DPS rule primarily to carve out a population -- just a segment of that sub-species for example -- and for a while they were using political boundaries, which the courts have almost exclusively ruled they cannot do. And now they're using kind of ecosystem-level carving out of subsets of the taxon.

So I mean we argued that the goal to meet the intent of the ESA, the goal ought to be to recover the entire taxon, whether that's a species or sub species. And in the case of the

grizzly bear, that really would be the entire species of grizzly bear within the lower 48 states, okay. And so that means in conservation genetic terms, that means managing that entire meta-population. And to do that, you need to ensure that there's genetic connectivity, that there are successful immigrants and emigrants coming into and out of each sub-population. That they're bringing genetic diversity from elsewhere to prevent the long-term effects of inbreeding depression, which can be a serious threat to the long-term survival.

You're talking about an overall meta-population in the lower 48, or 1800 animals, and in the case of the sub-population in the Yellowstone region, probably no more than 700 animals. So that's a small number for the long-term maintenance of genetic variation which is necessary for recovery.

You have only to look at another example from a native North American large carnivore, that being the Florida panther. Since they were isolated for many many generations and got down to a very small size, they had severe effects of genetic inbreeding such that over 90 percent of the males in the population were sterile essentially. And so a genetic rescue had to be performed by bringing breeding individuals from Western North America to mix in their genes with the existing population.

So that's an extreme example, but it shows what can happen over the long term if you have isolation. So you know we don't want the Greater Yellowstone Ecosystem population to be genetically isolated for many many generations. And it takes a certain minimum number of, as I said before, successful immigrants into all the sub-populations to provide enough of that genetic variation to prevent that kind of effect. Male sterility is one of many possible effects of inbreeding depression.

LW: So how do you think Fish and Wildlife Service has dealt with the issue of genetic isolation in the context of what is needed to achieve recovery?

BB: Yeah, I've found that to be one of the strangest things in that proposed rule that the Fish and Wildlife Service actually seemed to blatantly misinterpret one of the references they cited. And I went back and read that paper very carefully, and it did not say what the Service claimed it said, which was that effective population size -- which is arrived at by a formula and it's a fraction of the actual census population, but that's what geneticists have to look at, the effective population. Which is always a fraction, it can be as little as a tenth, maybe as most as a third of the censused population.

Well, they were saying that this particular reference claimed that the new minimum effective population size was 100 animals. But geneticists routinely cite the number 500 okay, five times what they were claiming as a minimum to maintain long-term genetic diversity. There are some population and conservation geneticists who actually argue for 5,000 for a long term maintenance of genetic variation. So that's where most geneticists are. Most of them are more toward the 500 end, but certainly not at 100.

So when you look at the current population of 1800 -- that's region-wide in the lower 48 - - that could be, probably is, an effective population of less than 300, ok. So we're not anywhere near 500 yet in the effective population size. To get there, you need bigger sub-populations and/or better connected genetically to form a meta-population. And really you need for those individuals to slowly expand, naturally expand their range into other suitable habitats so that you establish other sub-populations and bolster the overall meta-population. That's how you recover the whole species within the region, and that's clearly the intent of the law, the ESA, to do that.

LW: Can you explain a bit more about the role of Idaho's Selway Bitterroot ecosystem in light of this vision for recovery?

BB: Restoration of a viable population of grizzly bears in Idaho Selway Bitterroot Ecosystem is important because it is one of the largest remaining chunks of suitable habitat -- probably the largest remaining -- that is currently unoccupied by grizzly bears. And it's intermediate geographic location between the two largest extants of population, that is Greater Yellowstone and Northern Continental Divide, would make it a vital dispersal link, so that bears -- and usually geneticists say you need to have at least one successful migrant every generation moving between sub-populations to maintain that genetic connectivity and thereby maintain proper levels of genetic variation.

So, right now there's a very large gap, several hundred mile gap between the two largest extent ecosystems and that Selway-Bitterroot sub-population would be intermediate geographically and would provide, would aid that dispersal, would increase the size of the meta-population, increase its effective population size, and bolster the meta-population and make recovery of the grizzly bear in the region more likely. It is not currently recovered region-wide. And that would be a vital, I think, next step. And it's something the Fish and Wildlife Service committed to in 2001 yet they haven't done.

LW: Can you talk about your views on the major obstacles to achieving recovery?

BB: Obstacles to basing management and ESA decisions on science alone as the Act says. Decisions to list and delist should be based on the "best available science." Obviously you're dealing with an agency that has -- part of the whole hierarchy of the executive branch and decisions can be made at different levels. I mean the biologists in the field is the lowest level within that agency. Then they have to rely on other published studies, and as it moves up the line, there are various filters including the Director of Fish and Wildlife Service. The Secretary of Interior, primarily those two and then regional directors as well.

There was a case recently with the wolverine, which all the biologists agreed deserved to be listed as endangered, and primarily due to threats of climate change and yet, that decision was overturned apparently by a single person, the Regional Director. So, it's pretty obvious that there are politics, there are political pressures involved, and political

pressures, political considerations before that final decision is made. So it's not just the biologists' consensus, but it is a political process necessarily.

The other thing is that there seems to be some inertia within the agency. The whole idea of recovery planning and recovery goals, they seem to be stuck in this out-moded philosophy of picking a magic number. We're going to set a target and 20 or 30 years later, we're going to come back to that target that we set, which was 100 animals or 500 animals, whatever it is, and we're going to just be faithful to that target number 20 to 30 years ago without regarding any of the scientific advances made within those last 20 to 30 years. Now that to me does not honor the letter of the ESA, which says that their decision should be based on the best currently available science. The science changes. But their quotas, their goals, their magic numbers, they don't change. So they're stuck in this mode of always looking at a magic number and saying: "oh, see, we're several times above that recovery goal." That recovery goal is a very outmoded way of doing things according to the current science.

LW: Maybe you could touch on the role of the states in the push to delist?

BB: Well, there is state opposition to anything other than delisting, I think the states in this particular case, Idaho and Wyoming particularly, and Montana to an extent, want the species delisted as soon as possible so that they can satisfy the trophy hunting constituency. I think that's basically it. So they want recovery to be declared as soon as possible. And they have wanted this for many years. So there always that pressure from the states on the federal agency that has to ultimately make the decision. Because federal and state biologists, managers have to work together all the time on these issues.

The states in this case definitely want delisting, they want recovery to be declared, but the unaffiliated conservation biologists are not agreed. There certainly is not a consensus that this population is indeed biologically recovered.

LW: Can you talk a bit about what the ESA provides grizzly bears that the states do not?

BB: As long as the species, the grizzly bear, is listed under the ESA, it's the federal government primarily who funds the monitoring, and all the other aspects of keeping that species listed, because it needs to be protected, its habitat needs to be protected. There needs to be a lot of study, a lot of monitoring. So most of that is federally funded.

After a species is delisted, the federal government usually funds monitoring for a five year period and then after that it's up to whatever the agreement was made in the delisting rule, whether the states will pick that up. Presumably if the states agree to manage the species after delisting -- and that means there's going to be some hunting -- they would have to make some effort to survey and estimate population size and also mortality rates in order to know whether they are causing that species to decline to the point where it would then qualify for relisting.

LW: Can you talk some more about trophy hunting of grizzly bears after delisting?

BB: There's always a trophy hunting component -- and I use that term for large carnivores primarily because people who hunt large carnivores don't do so to eat the animals that they've killed. So it's unlike deer or elk and so on, the prey species which have historically been hunted for food -- which species can withstand a certain greater amount of mortality due to hunting.

Large carnivores, in many cases, they have very low mortality rates. So, the grizzly bear for example, it's a long-lived slow reproducing species whose natural mortality rate is probably less than 10 percent. So, it evolved without having to deal with high mortality. And if you add a significant component of human-caused mortality, they are not designed to deal with that as smaller animals, faster reproducing animals are.

LW: Do you have thoughts on the dynamics behind the states' push to delist grizzly bears?

BB: Typically with large carnivores, especially trophy hunting and ranching interests are heavily lobbying to essentially to keep the populations of predators as low as possible. And those two lobbies, particularly trophy hunting and cattle ranching, to a certain extent sheep ranching, tend to have outsized influence in the western states, and that is influence on state game boards, which are often politically appointed. And also on federal agencies that have to cooperate with the states.

So yes, they receive heavy lobbying from those two industries, and they typically do not want to increase the numbers of large carnivores and in some cases, they specifically want to decrease them. Certainly Idaho is great example with the grey wolf -- I mean, they are pretty open about their desire to decrease the current population of the grey wolf in their state.

LW: Can you talk a bit more about the role of science in endangered species management, and the requirement that FWS use the best available science?

BB: The phrase, the "best currently available scientific data," I believe is what it says in the Endangered Species Act, was a very progressive way to write that bill, because it anticipated that what we know about the factors that cause species to be endangered and the things we need to do to recover them, that knowledge is going to change from year to year to year. So, the politicians in the early 70s knew enough about science to know that it's always changing. And so they were not attempting to write the bill as scientists of the early 1970s. That's why that phrase appears, and that's why the Fish and Wildlife Service's long habit of using this magic number, which even then we can argue that their numbers are too low, okay. But that very approach of using a magic number, a target number is something that 20 years ago or more, conservation geneticists may have relied on, but we've moved on from that.

So the minimum population size is not something that conservation geneticists focus on these days. They look at population viability, which is a very multi-factorial analysis of

rates of birth and death and cause-specific mortality rates, to determine if the population is functioning as it should be and is large enough and stable enough, vital enough to stave off the long-term effects of inbreeding depression. So it's not the currently available science to look at all of these rates and all the functionality of the population rather than just the number, okay. And that is what Fish and Wildlife Service has not fully embraced about the current science of conservation genetics.

LW: Can you talk a bit more about the Endangered Species Act itself?

BB: The Endangered Species Act of 1973 was actually about the third iteration of legislation that was attempted starting in the late 60s -- and really it came out of the whole environmental movement after the first Earth Day in 1970. We suddenly got the Clean Air Act, the Clean Water Act, the Endangered Species Act all within a very short period of time, all signed by the great conservationist president Richard Nixon. I mean in that respect, he was very progressive.

The Congress was very progressive. The Endangered Species Act passed the Senate unanimously. And the House of Representatives, there were only four opposing votes. I mean, it's hard to imagine any major legislation these days meeting that mark. So, it was an expression of the overwhelming will of the people. Let's clean up our environment and let's save the parts of it that are part of our natural heritage. So it was a very progressive act.

Not without controversy, especially after it was first enacted, went into effect, there was almost immediately there was a controversy in the pitting of a small fish that had just been discovered in the Tennessee Valley with a giant dam and reservoir that was going to wipe out its only known habitat. So, pitting preservation, saving endangered species against development, has been a tension point from the start. And nowadays the same thing is true with many endangered species, because developers will say: "it's hampering economic development," ranchers will say: "this carnivore is damaging my business." And so there are conflicts.

But the act is written in a general enough way to embrace the current science, whatever that happens to be, and it's been highly successful. It has saved something like 99 percent of the species that have been listed since its enactment have been saved from extinction. We really, we're only talking about 40 some years since it was enacted, and that's actually not enough time for many species to have fully recovered. But many species have recovered. And everybody knows about the bald eagle, for example, and the spectacular recovery that was made in that case. And many others.

LW: Do you think the definition of recovery by Fish and Wildlife Service needs to change?

BB: Yes, I definitely think that our whole idea and definition of recovery, especially that which is ruled upon by the Fish and Wildlife Service, who has to make these decisions

about delisting, we need to base it on the best available, currently available science. And I think we need to look at the full functionality of a population where it has been restored.

And we also need to look at range-wide considerations, because another important phrase in the act is “no species should be threatened with extinction over a significant portion of its range.” There’s been a lot of debate about what that phrase means, although if you go back to the original writers, authors of the act, it seems clear that they meant the historic range of the species.

And as a practical matter, we’re not going to restore grizzly bears to the entire range or original range pre-settlement. But certainly it seems that the intent is to restore a species to all suitable range -- all parts of their historic range that are currently or could be through proper management be made to be suitable habitat. And often times for large carnivores this is going to be primarily federal public lands, a lot of it wilderness areas. And of course, the species is going to range to a certain degree on private land, especially during dispersal. So we have to look at range-wide what is the available suitable habitat. Are there any significant portions of it that are not yet recolonized, reoccupied by that species? And if so, we need to allow that to happen.

We need to have a functioning population that is at a level of what can be defined as “ecological effectiveness.” Are they playing their role in the ecosystem, whether that be an apex predator or whatever? Are they are functioning in that ecosystem the way they evolved to function over at least most of that historic range that currently offers suitable habitat? So I think that’s how restoration should be defined, and how recovery should be defined, rather than just looking at some minimum number and leaving it at that.

LW: So Brad, do you have thoughts on how could endangered species decision-making be improved?

BB: How the decisions are actually made about endangered species in terms of listing and delisting, especially in terms of delisting, is not very well delineated in the law. That’s where there’s a lot of grey area for the agency to kind of decide what they’re going to do and how they’re going to do it. I think that at various times in the past, the agency has done the right thing only after being ordered to by the federal courts.

And then one such case, they convened, they essentially outsourced the process to a third party, a well-known organization that works out of University of California. That organization put together an independent panel of experts on the issue -- so conservation geneticists and so forth -- and that panel met, and looked at all the current information, and made recommendations, very very detailed recommendations. And the Service by and large followed them. This is in the case of a small jumping mouse in Colorado and Wyoming.

Since then -- that happened in the mid 2000s -- they don’t seem to have gone back to that approach. They sort of tried it one time with the grey wolf delisting, but they got into all kinds of hot water because they went and looked at the history of each potential peer

reviewer of the proposed rule, and anybody who'd ever stated an opinion one way or the other on whether this species should be listed or not was immediately excluded from consideration as being a peer reviewer. Well that excluded many if not most of the leading experts on the grey wolf -- independent scientists on the grey wolf at the time. So, they had to scrap that whole plan and admit that just stating an opinion, science based, should not disqualify somebody from being an expert when he or she truly is an expert.

So I think it would make more sense and it would avoid more controversy, if they assembled this panel perhaps guided by -- outsourced to a third party that does this kind of thing and you could even -- the National Academy of Sciences could even do this, a highly regarded board. Have the panel review all the data and advise the Fish and Wildlife Service, along with their own biologists, along with what the decision should be before they even publicize it.

The practice now, which is not delineated in the legislation -- it's all executive orders, it's just rules within the agency -- the practice now is for the agency itself to come up with the proposed rule and then put it out for public comment, and then everybody in the public has a chance to comment. But they've already staked out their position without first convening an independent panel. And I think if they did it that way, they'd avoid a lot of controversy because they could say -- especially if they happen to agree with the independent panel -- they could say, these independent scientists agree on this decision with our biologists and so on. I would like to see that happen in the future.

LW: So can you review your thoughts on the major problems with delisting?

BB: The proponents of keeping a taxon listed longer typically are -- believe and/or know based on currently available science -- that the chances of true recovery would be better if they remained under federal protection, rather than management being turned over to the states. And I think one of the other controversies is the fact that again with large carnivores there is a knowledge that they're going to be hunted, in some cases almost immediately after they're delisted. And hunting is something that state management agencies try to get a handle on, they try to know exactly what the effect is on populations, but we can never really know. And when hunting becomes legalized, many conservation biologists are afraid that the population will suffer excessive mortality, will start to decline.

They're even recent published studies that once hunting is legalized in a species, in contrast to prior belief poaching of that species actually increases. Many people believe it's the opposite relationship but. So you have quantifiable and unquantifiable additional mortality on these populations that are just barely recovered. And that's why conservation biologists think that there needs to be a broader geographic region of recovery, higher population sizes than what Fish and Wildlife Service is thinking they need, and better genetic connectivity between sub-populations, in order to withstand that human-caused mortality.

LW: Can you share your thinking on why do grizzly bears matter to the ecosystem?

BB: Yeah, I think again grizzly bears are first of all bears are omnivores, so in some cases they may act as apex predators, they may have these sort of trickle-down effects on the ecosystem. Probably not clearly as much as the grey wolf has, which is strictly a carnivore. But they have interactions in many other ways because they sort of occupy multiple trophic levels. So on the one hand, they can act as apex predators along with wolves and cougars. On the other hand, they have evolved with their plant species that they consume such as whitebark pine, even insect species and of course ungulate species. So they have evolved partly as a top predator, partly as an omnivore, and they fit into this suite of species of large male carnivores which are most diverse and most prevalent in the mountainous west, especially in the Northern Rockies and nearby areas.

So what they're doing in Yellowstone, in the Yellowstone region, is they've fully reintegrated now that Yellowstone National Park has restored all of its native large mammals, they fully reintegrated into that ecosystem. They need to do that same thing elsewhere. Selway-Bitterroot Wilderness for example. Perhaps parts of the Colorado Rockies, southwestern Colorado for example where there's abundant food sources and perhaps even Northern California. Once they've kind of done that, they've reached ecological effectiveness, been restored to their natural function in the ecosystem, then they'll be much better recovered than they are now.

LW: Thank you so much Brad. You are listening to the Grizzly Beat, with Dr. Brad Bergstrom.