Speaker 1: um ok so great so yeah so like I said to the core the core folks of the projects is to understand if and how management is understanding biodiversity so one of the things that we learned early on in this project is that the term biodiversity itself means different things to different people so I think you probably already lose this a bit through the description of your work but i just wanted to circle back and explicitly ask what you think about when you think about biodiversity, what you think is the key aspects of biodiversity

Speaker 2: i mean more diversity the better. Im sorry, what was the second part?

Speaker 1: what you see as the key aspects of biodiversity

Speaker 2: As far as with work, and stuff like that, we look at a measure of things. i mean we look at it sort of funny thing for we we try to make connections and show why things are important and when we see those bottlenecks, we try to identify and highlight. Like right now, the big thing is forage fish. Trophic bottleneck and so you start to look at those things like where are those connections and cause you basically are challenging those points and retroponic perspective as your on this even though it shouldn't be this way the burden or proof is on you and rely on your decisions and so what i do i do my work is i focus on making those connections and why something is important and connecting the dots very directly so that they can survey defensible and so if you make an argument its like known this deserves come from here they're doing this that hurts that and that and not do that kinda thing. Its very much you know. Doing that for all biodiversity is hard to do because there is always unknown components that you know the chaos or you know of the system but what we try to do is highlight those things that are most important the question is how you know what are you missing because you not able to account and you find new things all the time as so a race that And with you know all sorts of new impacts to things so like in for instance now you're going you know as he sees chemical energy concerns which are things that happen like for instance in the mountain estuary they see fish and wild life we found fish had like super high levels of firecarnite Pvds in their system in a specific area and basically causing them you know delayed mortality and issues and stuff like that now we sorta trace that back it comes from the treatment plan and now we know what facility it comes from understandings that its industrial laundry facilities so think about all the stuff that you buy pvds I think actually banned or being phased out in Washington but that doens’t mean a whole lot because pvds are coated on couches chairs, carpet you know everything is coated in fibercarbon and so you find these things like oh crap you have to restore this are but its so poisoned that it doesnt even matter where you small strings where you have ppes the basically the ingredient in tires so a guy in Iceland pretty amazing he cranked and kept them running to find the specific chemicals. Basically its the antioxidizing agent they put into tires and cracks. The ingredient in it is extremely toxic to fish and then obviously when it breaks down so theres all these sort of things you discover that are discouraging. Its like oh. Then you get into pharmaceuticals and you know theres another potential huge liability for those Industries because they have a very good understanding of the metabolism rate and the off shedding of those chemicals in your body so they actually you could probably actually figure out what just do water quality testing and what contributes to those things theres lots of these layered things that are coming out like 300,000 new chemicals that never existed to nature before lets says World War 2 you know there's going to be more cancer yeah there can be more problems you know and so some of that stuff is sort of like you just in certain ways there's so much stuff going on it's sort of hard to like sometimes you like you're trying to do the best you can but sometimes it's like there's so many things going on in pressuring but again for our biodiversity thing, we try to make it a simplified line connection between some of these things so that more understandable and also the belief and simple things that so were getting very applied very much looking for a result instead of “isn't this neat”. Which it is but again where you know that's science that biologists trust and do intend to be directed towards you we find a problem like forestry is a problem. Ok. we need better management. Oh this is a problem. We need to do this and study those things. It's very. I wish we could be more proactive but it's very responsive in that way. But again i mean were sorta mapping out little bits of the biodiversity but we have a big understanding of yeah there's a lot more of these things and nobody wants to ever look at food chain you know cause it i mean they can overly count like and people can try and make these connections and convey the information but for legal public relations and all that stuff and regulatory so my small strings like back door attractions maybe these things are more important than your just gonna collect it ok it's important so now we're seeing that people are doing more to restore them. The funny part is sometimes people also like don't quite fully get it because what happens like with the small streams there's another project where were working with before with tire print and compoth small conservative in bay and smore freshwater and basically refer to that but has to be close to the natal river sand that is just as important because yeah because theyre bigger they winging the pelagic zone compared close to this really shallow habitat so there's like the funny thing is like being on in this world it's really ideal with both sort of like being frustrated with the like save everything and practicality like shut everything down right and you know on the other hand no screw everything we've worked for and youre trying to be sane and rational in this world of like sometimes you get it from boat saw and sometimes like people to support the middle middle of this distribution but at the end so again no to like a lot of the approaches we have is to see how to the specific species to protect that you have to go back to what the critical habitats are for and you go go down a rabbit hole you find that to defend things that are important and find bottlenecks again would be forage fish thats a trophic bottleneck so you know thats something that needs to be addressed like salmon and orca recovery. Seals used to be full, large, fisheries here and so they have to find significant then try to issues like anything context of a hanging climate and shifting ecosystems throw another wrench into the works cause you know i that so now i also deal with Setting up a marine and nearshore fish habitat partnership near California and oregon washington and so its the fish mishap and the national fish habitat partnerships.

Speaker 1:There's so many different ones we cant keep track

Speaker 2: yeah so were just steering committee that the one for the equestrian stuff cause there's so many things come up along the coast like symposiums peer you know Like Promoting extreme ecosystem recover everything I can remember anyway restoration so one of the things that we can't one of the presentations is like called elk Slough or something like that it's down and Northern California and they basically like they designed their restoration project and they filled it up to be in the higher elevation forests in the rocks were starting to think about that now, what does that mean, what ecology, what misses biodiversity cause were like important in marine habitats were gonna have these changing environments its that trust that die here so i mean were starting to care about like methods used so yeah i think i do think this is true of like connecting the dots of biodiversity always understanding that context of biodiversity incompressive but knowing that's the more diverse the better try to talk to people and inform like through every —-- look at the verge data and see go from the like four farm where its like so like rafters and service like sometimes water foul and you flood it and its like water foul and rafters and like marsh grounds and like stuff like that and then if you look to where the actually tree and marsh interact theres religious in the songbirds hummingbirds you know it's like you know its like two dimensional three dimensional habitats and you see like theres so much more out there and then also you see that theres more bugs for the fish theres a lot more the shade is along the stuff and you ssee differences in the i mean you observe differences when you get these places that you see more about biodiversity in the morning

Speaker 1: so when you say you worked to you keep saying like legally defensible and like have the regulatory component for biodiversity like how is biodiversity itself considered in your decision making or in the tribes decision-making around resource management

Speaker 2: I mean yeah that is a tough one. Like specifics to talk about biodiversity i think is can you say the question again

Speaker 1: yeah so um is biodiversity something itself like specifically considered and managed in resource management or in your work.

Speaker 2: Yeah i some of the things that only push for certain I mean when we have the opportunity to push for like conservation or something to preserve biodiversity that definitely something we do okay but again and the legal aspect is because that's when we can actually make things happen is try and pass a treaty right that trumps the you know state law that require you to —-- right track to make should come and we should most chain law of the land that sits in the Constitution ask woman to – things that some other stuff in there

Speaker 1: ok cool what about like other approaches what are management approaches do you think are needed to better manage biodiversity i guess

Speaker 2: I mean I think one of the hard things about managing biodiversity again is sotra this com again you making your breaking out the landscape into individual individually managed Parcels right with individual people making those decisions on lands and theres a dynamic between property rights and the overall health of the system and that is a challenge because again americas built on property rights becuase people have property and here property arranged —-- and so that is the challenge for trying to balance out —-- alw out we should convene us stuff like that and financial charting in again we're targeting sort of keying areas where theres biodiversity of importance where are these important habitats we need to protect where can we not give ground and where can we give ground —- ok not sure what that management act in washington state not that perfect but at first distribute like theres places that are more important than other places and thats what we try and focus on sime —- and like estuaries and how high biodiversity you know obviously strange wetlands you know a lot more biodiversity you also see regions and projects like one of the things programs we have here is the bever relocation program because of how important the beaver and actually working with fellow standards to cover research on beaver and estuaries that he's tagging and tracking GPS tracking beaver structures and the beaver structures and sanctuaries do what they essentially do is they build these dance and houses and see basically \_\_\_\_\_ cool lots of insects not many predators basically making rearing ponds and so how important you know this again plugs into some of these like key things and you know I think beaver in recent issues been more understood is like the reason that a lot of these places are Lush and green is because beavers moved in and pounded the area all that siad before what wetlands trees grew and basically uou know ruined the system and thats

Speaker 1: yeah habitat engineers

Speaker 2: but you'll see that were —- i mean where the traps is seeing where all that area is just a beaver city like probably like —--

Speaker 1: beaver city

Speaker 2: its like beaver college had like it doesnt sound great just as many —- tenets and such —-- internets started becoming a thing we had changed the name because they had so many issues with

Speaker 1: Sure which could capture it now

Speaker 2:its kinda funny but also kinda sad yeah theres lots of jokes there are people who are like cmon on were over it For 5 years money but yeah its really interesting how important this sems to be for literally anything i mean you can obviously find things that produce a lot of biodiversity i think I think what Are those things mulitfunction that are really important for biodiversity and promote the most biodiversities obviously talking specific species but if you want to do you know indicator species of concern species of concern then going form there but what were ultimately looking for as we dig deeper it just the tendrils go across os many different things that what you alreadya assumed youre finding it takes you a long time to connect those dots so you prove solid relationships and take that to a judge and your like the work involves the legal and very diverse i know Legal stuff of politics you know theres outreach so science you know it all comes to like this some people are really hard science people youre not just trying to understand something youre trying to affect the change. That were trying to do is the fact change to specifically things those are populations for your sting basically try and culture iss dependent on you know if the sand culture and so if its very different not in a hury to christian perspective for all that but thats —-theres really interesting work getting done i didnt do the work i was helped out some prefesssors i was worked with at univerestiy out west. Mary, tucker, joe, they ran series on religion, ecology, trying to erase ethics and religion and so theres actually a whole series at harvaed conferneces with each individual with list of different things at the end they had a poem reading conference that was unique and then these they have hindu indigenous yuo know daoist christian judeoa muslim all these people culters promising busy — focus in interesting talk about certain

Dominion perspective

Yeah just trying to look at ethics and each religions high

Thats a we have a chesapeake workshop