**[Interviewer 1:** Yeah, that’s kind of why I was hoping you would say that because while the file is downloading, I have to look at it before I can send it to you and I don’t really wanna see this. I don’t wanna hear this.

**Interviewer 2:** The transcribing audio with my voice is already one of my least favorite things, so I don’t need to add video component to it.

**Interviewer 1:** We need to get an intern for you specifically so you don’t have to do it anymore.

**BD027:** This person is brought in just to perceive us, and that’s their job, is like so we don’t have to perceive ourselves.

**Interviewer 2:** We tried to, Sarah and I tried to use like Zoom transcript early on in the project and it, I mean, it worked okay but for some reason something about the way I was talking, it had a ton of swears in it, like it thought I was swearing constantly? And I was like, this can’t go in my government google drive that I’ve been… can’t happen. Okay, so to start, so you know the overarching goal of the project is to understand if and how we’re managing for biodiversity and to understand how experts like yourself think about biodiversity, and so as a starting point, we’re wondering when you think about biodiversity, what do you think about? How do you conceptualize, how do you define it?

**BD027:** I think what you’re gonna find as we start talking… I’m a very macro-level, I'm not a details person and so I think biodiversity is no exception to that. I think about it less in the idea of individual species and sort of the count of species in an area, which would be the more traditional definition but rather the set of conditions that allow for multiple types of organisms to exist in the same place. So, that would be at sort of like the terroir that’s like the physical climate, sort of like the outside influences that are acting on the physical conditions in that area and then any other stressors that would reduce the ability for multiple types of organisms to live in one place at one time.

**Interviewer 2:** Okay, awesome. So, one thing that we’re doing with this project–we didn't talk about this the workshop, so this may be new to you, but you can see that Sarah has some concepts already population in–and so we have been trying to develop a framework to help define and conceptualize marine biodiversity particularly, of course this is a marine project. And so we’ve come up with this framework that is four bins and they are habitat forming species, species of conservation concern, key food web supporting species, and harmful organisms. And so we’re wondering if you agree with that framework, if there’s any changes you would make, things we’re missing, or one of those that you might not agree with that we should take out.

**BD027:** That’s interesting. Okay, so harmful organisms is interesting to me… cause harmful could be subjective in a way. I mean, as you guys know, not everything is polar, positive and negative, there’s a lot of nuance related to even something as cut-and-dry as invasives. So my question for that would be, if we’re starting with setting the playing field here and we’re generalizing, it would be harmful to what would be my first question when we’re talking about harmful organisms? The rest seems pretty okay to me. Species of conservation concern is interesting because it does bring this sort of human dimensions element to that. When we talk about conservation, conservation is a management term, its not a biological term, so when we’re talking about biodiversity, i guess it probably plays in… that’s not a fully formed thought… that’s another thing that’s particularly interesting to me.

**Interviewer 2:** Okay. Cool. Yeah, no that’s great. So, in terms of building out our FCM, like Sarah brought harmful organisms down to the corner, do you think we should remove that from the model? That’s fine if you want to or is there… can you think of a reframing of what you’d prefer to call it?

**BD027:** What we would need to settle on is like… it would need to be… yeah, I think I’d pull it out for now just… it’s kind of a little atheist (?) in the way that I think of it.

**Interviewer 2:** Cool. Alright so we’ll just take that out. Okay, and so are these other three components, are these things you think about in your own research? Are these… each of these categories, like are they considerations for you when you do your own research and work?

**BD027:** Yeah, I would say so. Definitely on the food web side and the conservation side because the nature of my work is sort of inherently ecosystem based. Those are two things that are kind of ripe for indicator development and areas of initial concern. I think the habitat forming species also come up especially when you start to talk to subject matter experts and people who are a little bit more in the nitty gritty, between the lines of ecosystem science as well. They might not be at the forefront or as charismatic as the other two bins but they definitely all come into play.

**Interviewer 2:** Okay. Cool. Okay so before we go on in terms of building out FCMS, so we’ll leave those three concepts in, I saw Sarah added community diversity from your initial, your first response to how do you think about biodiversity. Are there other components to biodiversity that we should add to the FCM or does that capture it all?

**Interviewer 1:** I had trouble hearing your response, so the parts that I did pick up on led me to put community diversity, but we can change it.

**BD027:** No, I think it makes sense. Yeah, I think about it less as a purely biological concept and more of this sort of macro-scale set of conditions and so if we could find a way to build something in that sort of incorporates the physical and chemical conditions necessary for multiple organisms to exist in one place, that would be the one thing that comes to mind. And maybe, I mean… yeah, yeah, I guess that’s what I would say. I’m very much a rambler, you guys probably picked up on this at the workshop, but I’m gonna leave it to you two to tell me when to stop and shut up because with these open ended questions and things like that, I really do run the risk of just going forever.

**Interviewer 2:** No, no, no, that’s okay. And that’s, so I didn't even say this but how we’ve actually been doing the other interviews for folks who don't have background in FCM is I just facilitate the FCM and Sarah builds the model in the background and we don't even show it. And sometimes we don't even show it at all, like we just build it from the transcript and from the conversation after cause a lot of people–like scientists love to talk, as you know, so you’re not unique in that regard at all. And it’s helpful, it’s really helpful. We’re doing dome qualitative analysis as well, so we love it all.

**BD027:** Cool. Okay.

**Interviewer 2:** Okay, so favorable environmental conditions, community diversity, I was just looking at my notes too and you were talking about stressors initially as being important in thinking about biodiversity, so maybe should we add something about that?

**BD027:** Yeah, external stressors or… yeah, stressors that are sort of external to the ecosystem that would potentially influence the ability for multiple organisms to coexist in one place.And that’s broad, I mean, there’s a million different things that could fall into that and it also kind of \_\_?\_\_ the environmental conditions as well but I think we could start with, yeah, external stressors is the way to sort of capture that to start.

**Interviewer 2:** Okay, perfect. Yeah, as you know, the number of nodes can spiral out of control so keeping things broad because these research questions are also extremely high level like it sounds like in your project is helpful for now.

**BD027:** Definitely. Yeah.

**Interviewer 2:** Okay, so now that we have our core biodiversity concepts set for our FCM, the rest of the model we want to focus specifically on your area of expertise and your current work, so I see Sarah added in IEA development and offshore wind cause we know from talking with you that those are like two of your core responsibilities. Is that accurate? Is there other things you’re currently working on or like those are still your two primary areas of focus?

**BD027:** Yeah, I would say so for now. I think the only other thing I’m kind of \_\_?\_\_ with at this point is a lot more ethereal, it’s like indicator science based that doesn't have to do directly—that's more of a management side topic than an actual science thing, so.

**Interviewer 2:** Well, that would be… like we want to include management in as well and actually our next couple of questions will be about management, so.

**BD027:** Then I would call it indicator science which I think about as a way to sort of repackage big data or complicated data into actual baselines.

**Interviewer 2:** Okay. Cool. Okay, so thinking about these concepts we have here, thinking about our biodiversity concepts and then under the umbrella of your area of expertise and your work, these three orange bins. Are these components of biodiversity explicitly considered in management and if so, in what management approaches or policy? So thinking about your area of expertise specifically, like is biodiversity considered during decision making processes when thinking about offshore wind, for example?

**BD027:** Generally speaking? Or within my area of work?

**Interviewer 2:** I would say within your area of work, like, to narrow it in a little bit.

**BD027:** Yes, I would say with the offshore wind, we’re trying to build… its something we’re considering, yeah. So we would consider biodiversity, or sort of the building blocks of what you would generally consider biodiversity to fall under what we call NOAA Trust Resources which you know plenty about, Kelsi, but I would consider it to be broadly under the scope of the things that we’re federally mandated to consider when we’re doing our science, and so the work that I do is to make sure that we have all the tools that we need to track those things so they can be considered on the policy side.

**Interviewer 2:** Cool. Okay. So you just said that biodiversity is something that you’re federally mandated to do. What policies do that?

**BD027:** It’s my personal opinion, and it wouldn't be codified anywhere, but it's my personal opinion that the general concept of biodiversity would fall under a broad interpretation of the public trust resources that we are instructed to monitor and regulate.

**Interviewer 2:** Okay.

**BD027:** \_\_?\_\_ all kinds of qualifiers there so I don’t get in trouble but yeah, you won’t find it written down anywhere. It’s my personal opinion that it’s something that should be considered and is actively considered in the work that we are doing.

**Interviewer 2:** Gotcha. Okay. Are there specific management approaches, I guess you just answered the policy component, but are there specific management approaches that you can think of that do consider biodiversity that we can add as concepts to the map aside from like the NOAA Trust Resources that we just said?

**BD027:** So in my world, one of the places where we directly interface, what I would consider to be a management community–and I also don't consider myself to be a manager or really that many folks within NOAA to be managers themselves–but we do report to fisheries management councils who we consider to be managers and we interface oftentimes with state level managers or local managers who are actively doing that work and that’s a two-way street in my world. So we present science and useful information tools to fishery management councils so they can act on them, and that includes oftentimes measures of biodiversity in one way or another. And then we also collect feedback from those folks about the work that we’re doing, what we should be studying, and what data we should be collecting as a cycle. So, biodiversity becomes sort of a something that is measured on our end either at the request of or to benefit people who are doing the actual management. It’s one of the many things that I think we feel the need to quantify in some way shape or form and track as sort of a broader measure of ecosystem status or health.

**Interviewer 2:** Okay, so instead of like an actual management approach, from your end it’s more biodiversity monitoring might be like the concept to add?

**BD027:** In my neck of the woods, I would say so.

**Interviewer 2:** Okay. Is there anything else related to the offshore wind side of your work that you think is important to include here for management that impacts biodiversity before we move on?

**BD027:** So do you want me to speak on behalf of BOEM even though I don't represent BOEM?

**Interviewer 2:** Yeah, I think to help paint the whole picture that would be helpful.

**BD027:** Biodiversity is not something that needs to be considered by BOEM in their offshore wind leasing process. And as you know, it’s sort of a two-step process where BOEM does the initial siting and they run the auctions and they sell the \_\_?\_\_ rights to the area where offshore wind is going to be conducted and then BSEE, their sister agency, is the one who actually enforces what they call a construction and operation plan and they’re the ones working side by side with lessee the product company that’s actually putting the thing in the water. At no point is BOEM or BSEE required to consider things like biodiversity so we work with them informally to deconflict their processes and we do that–what we tell them is that it’s going to reduce the amount of litigation that they’re going to have to deal with in the future. When they do things that conflict with our trust resources, we have no choice but to sue them or join on a lawsuit where an NGO is suing them on behalf of \_\_\_?\_\_\_ or something like that, but on paper, they don't have any sort of obligation to consider biodiversity or anything like biodiversity in their processes. Now what we’ve seen is that they’re doing some of that in good faith because of the work we’ve done with them a little bit and to cover their own asses, but in terms of public perception, just sort of ensure the quality and longevity of these projects and like I said, to deconflict and sort of reduce the risk of legislation in the future. But I think when you talk about offshore wind and biodiversity in the policy side of things, I would be remiss not to mention that it’s not something that’s codified or required in any way shape or form by any of the actual regulating body.

**Interviewer 2:** Gotcha. Okay.

**BD027:** Which is tricky cause then we got to find avenues outside of traditional formal governmental processes to communicate these risks and sort of… if we want them to be considered, we need to bring them to the J1 \_\_?\_\_ always.

**Interviewer 2:** Okay, so my next question was gonna be are there management approaches specifically that you think are needed to better consider biodiversity when we’re making these decisions and you basically just said we have to think outside of regulations, right, and find other avenues, so what would those other avenues be do you think?

**BD027:** Yeah, well it’s less a management issue and more a policy issue. The issue lies in that the agency that’s in charge of putting these things in the water is not required to consider–they’re required to do an environmental assessment–but they’re actually challenged(?) by the results of the assessment and aren’t sort of responsible for the environmental impact of the decision they’re making. They’re a for-profit government agency at the end of the day and so it's less of a management approach issue, right. When we talk about management we talk about actual regulations and sort of boots on the ground decision making at a lower level than how this is operating. This is a structural disconnect between the goals of the people who are in charge of making this happen and sort of the consequences potentially of their decisions.

**Interviewer 2:** Okay, cool. So I see Sarah added environmental impact assessments. Is there anything in terms of like a concrete concept, is there anything else that you think we should add to the end as a concept?

**BD027:** On the management side?

**Interviewer 2:** Yeah.

**BD027:** Biodiversity monitoring, NOAA trust resources, environmental impact assessments… We found the BSEE construction operation plan as a potential avenue to build in consideration for some of these things, and that is something I would consider to be more of an actual management activity than policy requirement. Yeah, it’s the monitoring, the construction operation, and the environmental impact assessments are the big ones.

**Interviewer 2:** Okay, cool. Moving a little bit beyond management, who are… this is a loaded question but… who are the most affected stakeholders and ecosystem services from these management decisions–and we’re talking here about offshore wind, in this case–so both positively and negatively, who are the winners and losers based on how we manage offshore wind and biodiversity?

**BD027:** The BOEM and BSEE, there’s the private lessee, the operation of the offshore wind enterprise, there’s… so fishermen are the big one. That’s tricky, and I won’t necessarily say whether it’s a positive, \_\_?\_\_\_ positive or negative impacts, and there’s likely to be trade-offs on multiple scales. There’s fishermen–and beyond fishermen–there’s broader users and recreational resources in and around these areas, things like scuba diving, snorkelers, people who, I don’t know, dive for shipwrecks, stuff like that who should be considered. There’s transportation, so there’s transit considerations. there’s … Department of Defense is heavily involved, so there’s national security players in there as well who are involved in this. And then, there’s external private companies on the energy side of things who are operating more traditional forms of energy generation like oil, natural gas, coal, things like that who potentially are affected by the inflation of offshore wind. And then finally, there’s shoreside economic stakeholders in the form of people who need jobs, community organizations who education for job creation or skilled job creation and training in these areas. And then the last one that we tend to think about are what we would call second degree community folks who arent directly involved in the actual construction or operation of offshore wind but may be affected by environmental justice concerns or downstream effects of the construction or operation of these places.

**Interviewer 2:** Okay, awesome. Okay, so those are our core questions to build out the concept list. I was gonna ask you similar… like basically go through those questions about management and stakeholders with the other component of your job of IEA development and indicator science but for the sake of time… like I don't know if we have want to go to that conversation. Is there… we can just take those out of the model or if you think that…

**BD027:** No, I think… I don’t know how different they would be… I’m trying to think. I guess like the indicator science… you might want to include like academics, researchers who are external to what we do whether that’s at the university system or working for other research enterprises. I think that’s the only one that I would mention on the IEA side that’s maybe not included explicitly in offshore wind.

**Interviewer 2:** Okay. Is biodiversity a consideration when you’re doing your IEA development and your indicator science? Is that a component of that work?

**BD027:** It depends. Cause… and this is tricky, this is where it’s gonna get meta… inherently \_\_?\_\_ is driven by stakeholders and so depending on the project that you’re doing and whose running the project, whether or not biodiversity is a major consideration in the work that you do would be driven by the perceptions of the people that you’re hoping to serve with the clients.

**Interviewer 2:** Gotcha. Interesting. Okay. We can leave it at that in terms of the modeling, but that’s good to know. Okay, so obviously we have a lot of concepts… shocker. I think for the sake of time, I want to focus on the blue concepts, the biodiversity concepts, and understanding what is impacting biodiversity and how biodiversity is impacting the system. So, maybe we’ll start by linking the blue biodiversity concepts with the orange concepts, your area of expertise. So how does biodiversity impact offshore wind and vice versa.

**BD027:** Sure. Hm, so, I guess if we start with external stressors and offshore wind, you consider offshore wind to be an external stressor to biodiversity in many cases. There’s definitely going to be positive and negative impacts to biodiversity caused by offshore wind, but regardless, it’s sort of an intrusion into a system that’s in theory already in flux and a new set of conditions to consider when thinking about what needs to exist for biodiversity in a time and a place, so. Community diversity is to be determined, I would say there probably is some sort of impact but it’s yet to be seen whether it’s positive or negative. And then favorable environmental conditions, it’s the same thing, there’s a lot we don’t know about the conditions that offshore wind and the infrastructure needed to run offshore wind are… what’s going to happen in terms of the environmental conditions we affect. So it definitely has a link there but we don't know if it's positive or negative. On indicator science, I’d say a lot of times, we’re trying to quantify external stressors with indicator science and IEA development so the presence or absence of external stressors I guess would have an influence on the work that you’re doing for IEA or indicators. I think that would actually go for all three of the blue components where with community diversity and the environmental conditions because inherently what you're trying to do is quantify and measure those things in a way that they become actionable in a way. Yeah, so I think that directionality makes sense to me. And I don't know… I would tie all of the orange components together, they’re things that are inherently linked in my mind, the indicator science, IEA, and offshore wind, I’m working on all of those things sort of in a concert even though they’re sort of separate lines in my job description, they’re all concepts that kind of work together.

**Interviewer 2:** Okay, i’m trying to think through because so with the blue concepts impacting indicator science and IEA like you’re saying, when thinking about like positive or negative, this is where, as you know, it's tricky to draw the linkages with FCMs sometimes because would we say that an increase in stressors would be an increase in indicator science? So that’d be positive?

**BD027:** It would probably increase the number of indicators that you would need to develop to represent a system.

**Interviewer 2:** Okay, gotcha.

**BD027:** It also depends on the goals of the indicators and the end user or things like that. There’s times when you develop a report and it’s necessary to come up with like 98 indicators versus some… last year, we did a Gulf of Mexico report, I think they settled on 9, so it really depends on what you’re trying to do.

**Interviewer 2:** Okay, and is that the same logic for the IEA development as well?

**BD027:** Yeah, although…

**Interviewer 2:** Cause if we have number of indicators, then how do we quantify with IEA is where I’m struggling.

**BD027:** Right, right. Well, the point of IEA is not necessarily indicator development but the identification and viewing a system from this macro-scale ecosystem based lens. So I would say an increase in the number of external stressors would increase the need for something like an IEA perspective. That’s how I would think about it.

**Interviewer 2:** That makes sense. Okay. That’s in purple. So what about the gray boxes, or the white boxes, underneath, so those other bins of marine biodiversity that we added into the model.

**BD027:** Yes, I think of species of conservation concern as potentially an input to indicator science and the IEA. I would also think that IEA would feed back into species of conservation concern because–and actually indicator science would as well–because those are methodologies to identify conservation concerns or put bounds around the idea of where conservation as a model would be necessary. Species of conservation concern are also a consideration on our end, like I said, of the offshore wind science processes and the work that I do. It's something that we’re trying to have built into the decision making process of offshore wind. Actually, that goes for all of them, \_\_?\_\_ species and food web supporting species, all the same. I don't think I would distinguish between any of the three gray boxes as more important, less important, or like more or less of a reason why we would need to take a certain approach to do the work that we do. Yeah, so I would copy paste that connectivity three times for the gray boxes.

**Interviewer 2:** Okay, cool. Okay, if I remember correctly, you have something after this and I don't want to–even if you don't– I don't want to take up more of your time.

**BD027:** I don't. I’m good.

**Interviewer 2:** Are you sure? I feel bad taking up so much time.

**BD027:** No please! I feel like we should knock it out.

**Interviewer 2:** Okay, cool. Sarah, are you cool with staying on a little bit over?

**Interviewer 1:** Yeah, I actually am good until 6 my time.

**Interviewer 2:** Hopefully we don't need that much time.

**Interviewer 1:** I was gonna try to run between these two meetings but then once he started talking to \_\_ about an unrelated project, I was like it's not happening, it’s okay.

**Interviewer 2:** So sorry.

**Interviewer 1:** No, it’s fine.

**Interviewer 2:** Unrelated is not the right term though.

**Interviewer 1:** Okay attention conversation that is not the title of the meeting that I agreed to… how about that?

**Interviewer 2:** Okay.

**Interviewer 1:** Anyway, I can stay late, it’s okay.

**Interviewer 2:** Okay, cool. So, I’m going to backtrack a little bit, so as you know, we add weights normally to these. We can go through if we have time and add weights or if you want to but for a lot of these interviews we haven’t had the capacity to add weights and that’s gonna be a goal of our workshop setting is to validate the models and add weights, so it’s not a huge deal if we don't get to those and same with the links that have question marks, like normally mathematically we try to take the time to think through those trade offs and separate out concepts to make sure that we have quantifiable relationships but that will be a point of discussion in the workshop is to go through those trade offs and understand the uncertainty a little better to solidify the model.

**BD027:** Yeah, it might be tricky or difficult for me to add weights or directionality for some of these relationships just because the \_\_?\_\_ of like, we’re transcending the policy management sphere into… it’s tricky, right, because a lot of the concepts aren’t exactly on equal planes of like… so yeah, i’m okay skipping it if we don't get to it.

**Interviewer 2:** Okay. Cool, yeah, we’re thinking of these initial models as a little bit more qualitative than we normally would for that reason. I think you need a collaborative setting to talk through those challenges.

**BD027:** Okay.

**Interviewer 2:** Okay, so then maybe let’s move to the yellow boxes, those management approaches. How do those impact the system, and since we have the time, we can think a little broader. I really wanted to focus on the biodiversity components to start with in case we ran out of time but now it’d probably be easier to just think more holistically as we go through this to be a little more efficient.

**BD027:** Yeah, so internally within the yellow environment, the BSEE construction operation plan would probably contribute to biodiversity monitoring in one way shape or form and that monitoring would also feed into environmental impact assessments more broadly. NOAA trust resources and the research that we do because of the need to monitor these NOAA trust resources would feed into biodiversity monitoring and then also probably provide data for environmental impact assessments as well. I don't think the COP and the EIA are related in any way shape or form–maybe actually–so the findings from the EIA would probably influence some part of the COP. So the indicators that we’re developing through EIA so both EIA and indicator science are going to feed into the COP hopefully–that’s not something that is firm but it’s sort of like a verbal agreement that we have with BOEM up to this point. I guess that they’re not legally bound to consider a lot of these things but we have it on good faith to hope that the results that I’m doing will feed into a COP in the gulf of mexico. Obviously, the EIAs, the biodiversity monitoring, the COP are all parts of the offshore wind process. Those are legally bound, they’re things that are used to influence that process. The whole reason we developed indicators and \_\_?\_\_ is for the monitoring and management of NOAA trust resources so that is tied in. I’m making… this is a horrendo-gram for you guys I’m really sorry.

**Interviewer 2:** Are there any signage we can add to those question marks that you have so far?

**BD027:** Well, it’s weird right because they’re policy processes that are influencing each other, right, so it’s hard to say whether or not… for example, I mean, you could broadly say that more biodiversity monitoring would probably improve the offshore wind process, but that’s kind of subjective, is the thing.

**Interviewer 2:** Right. Okay.

**BD027:** Yeah, that would be my opinion but that might not be the opinion of a potential lessee or someone who's trying to bid on the mineral rights to put these things in the water. Or someone who’s in charge of \_\_?\_\_ construction operation plan who all of a sudden has all these new things to consider. Let’s see. Biodiversity monitoring would be a part of… it’s directly monitoring these species of conservation concern, habitat forming species, and our key components of biodiversity that we talked about in the beginning. Like when we talk about biodiversity monitoring, we’re talking about those things. In theory, going through the process of building out and tearing through construction operation plans and EIA or the research that we’re doing to manage NOAA trust resources, the goal is to have positive impacts or negligible impacts on the gray boxes. So, yeah, I guess it would be… you’re trying to either improve or not disturb rather–ideally, there would be no disturbance whatsoever to those gray boxes over there–well, improvement of species of conservation concern because that is objectively something that’s a management goal, right, to improve the conservation status of those species, but on the other two, for food web supporting species, habitat forming species, the hope would be that the intrusion to the ecosystem would have negligible to no effects and the creation and implementation of these COPs, the environmental impact assessment, and the research that we do to manage trust resources are the tools that we do to evaluate that relationship and then carry out or put guidelines around those potential impacts. Um, okay, and then, with the yellow and the blue, the hope is that the construction operation plan would mitigate external stressors and reduce those. The hope long-term is that biodiversity monitoring would improve community diversity or at least allow us to track it, so maybe not 100% positive but like–this is where it’s tricky, right, because the goal is not necessarily to improve biodiversity when we talk about managing trust resources or what I consider to be biodiversity under my personal definition. The goal is to reduce the influence of these intrusions to the ecosystem, which, whether to say that’s a positive impact or a neutral impact I think is up to whoever is receiving that information. For me, when we say biodiversity monitoring, we’re doing that to track changes in biodiversity, not necessarily to improve biodiversity, and if managers want to use that information to improve biodiversity based on their roles, they can do that, but we’re supplying them the tools that they need to make those decisions.

**Interviewer 2:** Okay, so we won’t add it because like you said that’s outside of your scope, but it sounds like in terms of mental modeling, we would need a concept in between some sort of management concept that the monitoring feeds into that then impacts diversity?

**BD027:** Yeah, absolutely. I think in my personal estimation, I think having biodiversity is a good thing, I think having more of it would be great, but in the work that we’re doing inherently with offshore wind and IEA science and things like that, the goal is to create information exchange and tools that managers… it’s to make things that were not previously actionable or available to be monitored, monitored or actionable so that the managers who actually have the power to do those things can do it. And I have my own personal beliefs about how those information should be used or whether or not like, everyone’s student loans should be forgiven and blah blah blah but my job is to give people the tools that they need to make those decisions and not to influence those decisions per se, unless they ask me to. But yeah, so there would be a step there. I wouldn’t be the right person to ask about what that step would be.

**Interviewer 2:** Okay. That makes sense.

**BD027:** And then, yeah and this is also what’s tricky with the directionality, right, like the environmental impact assessments and favorable environmental conditions, the EIA is a forecast of the potential impacts of an intrusion on an ecosystem and so in a way you’re mitigating negative environmental impacts but you’re not necessarily influencing positive environmental impacts of environmental conditions I mean. You’re forecasting impacts but not necessarily improving conditions, which is where it becomes hard, right, because I feel like there is a connection there but I don’t know if I would necessarily call it a positive connection. It’s just sort of this exchange of information or analysis about the present conditions and possible future conditions.

**Interviewer 2:** Well, I think as–based on what you just said–I think we might not even need that link and it might be indirectly already considered in the model because–if I’m understanding what you said correctly–environmental impact assessments work to decrease the stressors that would then enable the favorable environmental conditions, right?

**BD027:** That’s true, yep. Yeah, you’re right. Yeah, okay.

**Interviewer 2:** Cool, okay.

**BD027:** And then I guess I’ll start delving into the players here, our purple boxes. National security, that’s on the right(?), and I guess potentially impacts NOAA trust resources in the things we do. They’re definitely considered in environmental impact assessments and construction operation plans. I would consider national security to generally be an external stressor to biodiversity as, in the most macro sense possible. Yeah, and actually probably a negative impact on favorable environmental conditions as well. I can’t really think of a scenario in my experience where it’s been positive. Academics, researchers, they are recipients and potential end users of the IEA and indicator science frameworks. They benefit and contribute to IEAs both and they definitely contribute to biodiversity monitoring as well. And, but they’re research is influencing the offshore wind process and the things that we know or the things that we choose to research and focus on. I would consider external academics and researchers to be important positive influences on our knowledge related to species of conservation concern, habitat forming species, and food web supporting species. Whether or not those are actually positively influencing those things themselves… I think there’s a step there that I might not have included in the model but the knowledge that they generate is something that could potentially be used… and maybe that goes through the red boxes better than directly cause the hope is they’re contributing to the greater body of knowledge that we’re then operationalizing for some sort of management step. The lessees are required to comply with the construction operation plan and environmental impact assessments. They may also contribute to biodiversity monitoring through the construction operation plan, if that makes sense. It is not something they would choose to do on their own, but it might be something that’s required of them through the COP. They are participating in the IEA process which is cool, so they’re built into that. I would say they’re a positive influence on the IEA and development of what we call integrated ecosystem assessment and I will withhold generalizations on their influence on biodiversity or aspects of biodiversity directly. Fossil fuel industry… is… really… kind of… might not be directly connected, on a first order magnitude to anything else here off the top of my head. They are technically–they can be lessees, so they might be one in the same in some ways, but like if you’re speaking about that as \_\_?\_\_, I don’t know if I’d plug them in directly anywhere here.

**Interviewer 2:** Gotcha, okay.

**BD027:** Operational users benefit from…favorable environmental conditions, I’d say, for the things they care about, and that’s probably as far as I’d go with them for now. I think maybe external stressors impact their ability to recreate in a way that they would like. I don't know if the concept of community diversity, of biodiversity as a whole, would broadly affect people’s ability to recreate. I think there’s individuals who probably have some intrinsic value that they associate with the concept of biodiversity, but it might be distinct from their ability to recreate in a way that is meaningful to them. BOEM and BSEE are both plugged into all the red boxes. They are participating in the indicator development process and the IEA process. They are also the need for… essentially, their actions and their goals are the reasons we need to do these things as well, so it kind of goes both ways. Yeah, BSEE is the one developing and implementing the construction operation plan. BOEM is an end user, biodiversity monitoring products. They’re kind of like an aggregator of science in a way which is very interesting. They’re also the ones conducting…BOEM is conducting EIAs, not BSEE, and they are directly… they’re kind of setting the playing field for the lessees, in a way, where they’re sort of calling the shots that the lessees have to be… they’re creating the regulatory environment that the lessees need to operate in, which is a direct influence in my mind. Back side shore operation… they’re influenced by the construction operation plan as well. On the shore side of things, I don’t think I’d put them anywhere else. Fishermen are part of the IEA, they’re part of indicator development, and they’ve been part of our offshore wind science enterprise up to this point. They’re also, in a less meaningful way, participating in some of the BOEM and BSEE processes through these listening sessions that they do that are sort of a way to check the boxes of stakeholder engagement. It’s kind of unclear how actionable these relationships are, but they are connected in that way, and they are influenced by the construction operation plan. Yeah, these sort of like second-order communities or people who are–second order is a weird way to put it–when we talk about second order, what we really mean is sort of like the social and cultural environment that this offshore wind enterprise is operating in that’s not directly sort of part of the process and so that’s where you start to get into job creation, the community perception of how they’re home and like identity perceived both internally and externally, and that… it’s tricky to plug in here as well. I think the favorable environmental conditions might play into that but that’s also kind of something that’s speaking more to biodiversity and like marine life rather than the general environmental quality of the place where this is happening, and also like human definitions of favorable environmental quality don't always necessarily line up with what’s favorable for biodiversity, so I’d leave that out I guess for right now. Transportation shipping that falls under the COP, that falls under… yeah, that’s the big one I think like just how they’re able to operate in relation to the wind turbines and the physical structure of turbines, and I think we’ve gotten around to all of the nodes, which is \_\_?\_\_.

**Interviewer 2:** Cool. So, I have a question for you cause this is something that I hate about FCMs, right, because of the limitation I guess you could say and some thing I with Steven Gray about, and I’m wondering… I haven’t had to deal with it too much in my work but I imagine you have, given the models that you’re building, so you’re supposed to have a node that can increase or decrease, right, to build out the quantifiable relationship? So for a node like BOEM, for an agency, how have you been phrasing those nodes in your models?

**BD027:** Super broadly, so like we have this sort of secondary step where we filter a lot of details out into these broader categories…we don’t talk about BOEM specifically, we talk more about sort of the policy enterprise or like decision making enterprise of like how and where these things are sited, and so in the context of like, this is BOEM, this is BOEM’s sort of like policy environment, and this is where they put to management process. It’s more… the node would represent rather the sort of like policy decisions or management decisions that decide where offshore wind is being sited, sort of broadly.

**Interviewer 2:** Yeah, that’s what I was wondering if we could change BOEM to like BOEM’s decision making or something… that’s still not really… can’t have a positive or negative but like…

**BD027:** Yeah, and that’s why–part of it is also like, we think about it that way because we optimistically feel like we are part of that when in reality on paper, no one really says that we have to be. But when we talk about like the things that go into the spatial modeling of offshore wind in the Gulf of Mexico, right, we’ve been asked to be part of that process as an act of good faith but it’s not necessarily something that would need to happen in the future, so to couch it as like BOEM’s decision making process speaks to… it’s dynamic, right, it’s something that’s changing in both space and time because who’s to say the current Gulf of Mexico regional director won’t drop dead and they’ll change course tomorrow. And so we kind of speak about it a little bit more broadly to sort of… from nuance like that.

**Interviewer 2:** And I guess decision making is a little bit more quantifiable in the sense that like they can be more involved, I guess, is like their increased involvement in decision making is like what’s impacting…

**BD027:** Exactly, right. It’s their philosophy and their sort of idea of who and what should be considered rather than what’s actually on paper and that’s a little bit easier, more malleable in terms of like the concept of FCM because then you can add new inputs to that sort of decision making process as opposed to saying here’s how it’s written in the code of regulations and this… because that’s the only thing you can point to, it’s like concrete, and the reality is a lot more fluid than that.

**Interviewer 2:** Yeah, exactly, okay, that makes sense. And same thought with the construction operation plans, like I’m thinking that like you have more COPs, but is that the right way to think of it or is there like a different way that we should phrase that node.

**BD027:** It’s not like the quantity, it’s the level of… it’s the sort of requirements that are posed within the individual COP, so there’s only going to be one COP per lease and that’s going to be built out by BSEE in theory in conjunction with NOAA and other partners and things like that, but the idea is that the requirements that are imposed by that construction operation plan are what’s going to sort of create those downstream influences on the… because they could put one out that just says we don't have any plan or requirements for you and you can do what you want, in which case they’ll take the path of least resistance whatever’s cheapest, or they can do what we’re really hoping they’ll do which is say like we need you to build up a monitoring array of like salinity and biodiversity and you need to put up acoustic monitors and blah blah blah like all that stuff.

**Interviewer 2:** Yeah, okay. Okay that’s why I wanted to check cause I don't know anything about COPs, so I didn't know what those were until today, so.

**BD027:** We’re learning a lot about it too, but they seem, candidly, like our best way to make a tangible impact on the way the lessees are interacting with the environment when these things actually do go in the water.

**Interviewer 2:** Gotcha, okay. Alright cool, yeah to go back to the agencies, like that’s something Steven Gray and I talk about and it’s hard–like a lot of times you can’t have a stakeholder group that will increase but like recreational users, you can have more or less recreational users in the system, right, like you can make that quantifiable but the agencies are always more challenging to conceptualize.

**BD027:** Yeah, what’s the joke, right, Biden hired 180,000 IRS agents, that’s a big positive when you talk about the size of the agency. It’s not like that… there’s no positive or negative in terms of like numbers or ways to quantify the influence of a monolith or like an agency like that it’s like, it’s all about the philosophies and strategies that they’re using to fulfill their individual goals, which are also changing. There’s the things that they’re bound by by the Congress and the things they need to require. The interpretations of those requirements and the way they go about actually fulfilling those obligations is very dynamic which are hard to quantify or represent in something like an FCM.

**Interviewer 2:** Gotcha, yeah, yeah. It’s always a challenge with these and to think about like people always get hung up on positive and negative versus increase and decrease and especially for an agency like BOEM that in this setting probably has some negative connotations, you specify that and that’s clearly understood. Alright cool, well this was great. Crazy map as usual, but really really informative and really helpful.

**BD027:** You guys are saints for having to work through all of that but I feel lucky to be able to participate in the process so I’m very happy that you guys called on me for it.

**Interviewer 2:** Oh yeah, thank you so much for your time. We really appreciate it and to that end, we were wondering if you had the availability and wanted to come to the workshop in November in Alabama.

**BD027:** When is it?

**Interviewer 2:** So the workshop dates are November 15th and 16th, so it’s full day the 15th and then half day the 16th.

**BD027:** 15th and 16th. I think so, the only thing that might complicate that is that I will be at a conference the full week before that.

**Interviewer 1:** Which conference?

**BD027:** The Gulf and Caribbean Fisheries Institute.

**Interviewer 1:** I’m gonna be there too!

**BD027:** Oh, really! They got an influx of offshore wind papers and so they’ve added like a special renewable energy session Friday and she wanted us in there, so I will be there presenting on Friday, and yeah maybe we’ll be travel buddies in two weeks then because I will talk to–could you do me a favor and write up about the workshop to run by my schedule manager hopefully before he disappears off the face of the earth due to budget restraints. I can get a request put in. Cause I’d like to do it, it’s just a question of whether or not they’re gonna let me hop around like that.

**Interviewer 2:** Okay. That sounds great, yeah. We have like a formal workshop invitation email that we’ve started sending out so I’ll just have Steven send that to you so you have all the information there.

**BD027:** Sounds good and that’s in Mobile, I imagine?

**Interviewer 2:** Yeah, yeah, yeah, and we have–I don't know how your position works because you’re a contractor–but we are providing travel funding for folks to come and honorariums but I don't know if because of your position if you could accept those, but we have those.

**BD027:** I don't really know how it works, either. I was told I would have a travel budget when I got the job, it really does not seem like I do. It seems like they just kind of approve stuff and I don't know. It seems like it should be more strict than it is, so I don't know whether or not they would take an honorarium. I would imagine as like a money hungry university they would want to but I’ve never had it happen, so. And if for whatever reason I can’t go or you want more people like me who are kind of in this space, I have colleagues who are working in offshore wind, FCM, and sort of thinking about things at the macro scale as well that would be a good replacement if it came to that. Or if you wanted more of me for whatever reason.

**Interviewer 2:** I think we’re inviting Chris Kalble(?), I don't know if that’s one of the people you were going to say.

**BD027:** He’s my boss so he’s the one I would be potentially–and he’s actually gonna be in the Bahamas too so maybe we’ll just hang out in the southeast for two weeks together. Okay, and yeah Chris is obviously the one calling the shots on my IEA project and all this too, so yeah that makes sense. That also makes me feel a little bit better if for whatever reason I can’t go if he’s there to sort of represent us. He’s probably even a better option than I am.

**Interviewer 2:** Well, I doubt that but thank you that’s very… okay so I'll tell Steven to send you that email and it’ll have like all the funding information there as well for travel and the honoraria.