Interviewer: Okay, perfect. So I've read a bit about what you do and I've talked to Jane obviously about what you do, but before we kind of dive into the specific research questions, I was wondering if you could just tell me a little bit more about your work responsibilities, your area of expertise, your job?

BD015: Yeah, definitely. So my role is in Southeast Alaska. I am the management research coordinator for ground fish and shellfish fisheries with focus on shellfish, that being crab. So basically what I do is I'll do some in season management overview of our king crab, tanner crab, dungeness crab. We also do beam trawl, scallop fisheries, and then all the groundfish fisheries in the southeast. So what I do is review any stock assessments, any data that comes in that we need to make a management decision setting quotas. And then on the research side of things is reviewing different operational plans that do - like we have a hook and line survey that we do for sample fish, we do a ROV survey that uses distance sampling methodologies to review those methods and you know any model outputs making a management decision. I do a lot of meetings where I'll meet with industry and kind of facilitate those meetings or lead those more heated discussions with those folks. I also play a big role in our regulatory process. We have what is known as board of fisheries. I don't know if you're familiar with council stuff but it's kind of similar, but on the state side of things, we call it board of fisheries. So basically what we do there is we'll meet with the public during meetings, discuss any proposals that they may have, and we may have to improve regulations or change things. We do a lot of research and background to respond to those formally in the process. And then we go to a formal meeting and that's where those regulations come into play, so we’ll present background fisheries to members of the board, we’ll respond to questions they may have. And sometimes regulations change at the meeting. So we're there to provide background and any input that we may have, especially on management challenges side of things. Do some budget overview, or participate in surveys here and there as needed. Yeah, I think that covers it. That's a lot of stuff.

Interviewer: It sounds like a lot.

BD015: I do, I kind of do a little bit of everything. And most of my background in my entire career has been working with crab and then ground fish - for some species.

Interviewer: Okay, great. So, yeah, so my next question I think you just answered is what species or habitats do you manage? So crab, you said, Dungeness, Tanner, King.

BD015: King crab, yeah, King crab. So we technically have three species of King crab with two of them only having fisheries. So the Red King crab is a big one here and then a Golden King crab. And then for groundfish, kind of the big ones are yelloweye rocInterviewerish, sablefish. We do have a slim eel fishery or a hagfish, which I've been heavily involved in. And then lingcod's another big one, but I play more of a just oversight role in that one. But those are kind of our bigger fisheries with ground fish.

Interviewer: Okay, gotcha. Perfect. And so within those species, what policies or regulations do you manage or does your work fall within?

BD015: Let's see, how would I describe that? I guess for my current role, my role is more oversight and leading on some aspects. So like for golden king crab, I run the data analysis for that, so I take fishery data, go through looking over trends, produce a document, I produce for my project staff that they review, provide feedback, and so I kind of take a larger role in that. Other fisheries, I'm more reviewing items. So whether it be reports or projects or ideas, I'm more in a, I mean, my role as a coordinator, so I'm kind of coordinating things, making sure things are going well, making sure staff have the support they need. There's a lot of public questions. So I'm not necessarily doing the active in season management, but I'm more or less making sure that staff have the support they need, the data they need to do. And then they check with me, should we make a closure? Should we not? What are the risks? What are not the risks?

Interviewer: Gotcha, okay. Okay. So I think it'll be really great for me to hear your insight on this, given what you just said about coordinating, answering questions between public comment and managers. So what is the, like, what would you say the current focus or top concern is within these areas that we've been talking about within crab and other ground fish fisheries that you've been talking about?

BD015: Yeah, so I think a good example is with Red King Crab here in Southeast Alaska, this fishery has been closed for about seven or six years. And before that it was kind of open every five years. So it's not really - hasn’t been sustained from my perspective - it's kind of these more boom and bust openings where once you see a recruitment come up then it gets hit a little too hard and then it's closed for another period of five years so that's a hot topic where this past fishery cycle I worked with fishermen trying to get by and on revising that whole harvest strategy to be more consistent - kind of harvesting at lower rates - more harvesting at lower rates but able to provide hopefully more consistent harvest opportunity rather than this boom and bust cycle that we've seen in the past that failed at our board of fisheries, but got a lot of buy-in. That's a big topic currently that I've been working on. Red King Crab has always been kind of a contentious issue because you have your commercial users as well as your recreational users who operate it. So, it depends on that fishery. Golden King Crab is another big one. That's a fishery dependent dataset that we utilize. So we rely really on fishermen data and it's kind of gone through boom and bust cycles too, just like red king crab and we went on our period of low harvest and some closures and now we just saw a spike in recruitment. So fishermen saw it and they want more and so our concern is kind of if we fish it too hard too fast is it going to collapse again. So that's a pretty heated topic that we're working on now with fishermen. Groundfish topics I would say are yelloweye rocInterviewerish fish so that's a big one and that we've made some closures for about three years, maybe four years now. We saw some declines in biomass over time. So this is the fishery that we use an ROV for - yelloweye. So we saw declines in biomass over time. We know they're very long-lived species. They reach maturity between 18 and 20 years. So our concern is, you know, we saw some collapse happen in the West Coast, Washington, Oregon, and California. And so with a species that takes so long, that's long lived and takes long to reach maturity - we need to react sooner rather than later. So we took a very conservative approach and closures. So with that we've seen some slight uptick in recruitment. So - but it's led to a lot of heartache and tension with mostly sport users or charter fleets because they like fishing and you know they're able to fish fisheries and what the regulations are and rocInterviewerish has been a more consistent fishery available, less restrictive but we implemented some restrictions this past year. And then, uh, Sablefish. Let's see. I'd say, I'd say that one's not as contentious but it's also a big role where we have, um, we've had a lot of gear changes. We have what's known as plinky pots have come into play. You, as you mentioned, talking to Jane so I'm sure - so yeah, slinky pots are kind of a big gear change where we were trying to keep up with the policy and the science as guys have been using that. So we implemented some escape ring policy in there, some rod line regulations. And so we're seeing a massive gear change from hook and line gear to slinky pots. So we're just trying to understand all those changes and how to interpret the data when you have a big gear change over like that. So trying to get as much research out there to see what that conversion looks like from hook and line to pot gear. I mean, that fishery is not as contentious. Guys obviously want more fish, but they also recognize that if you fish on smaller fish that aren't mature yet, then that has an impact on the long term. And Black Cod are a stable fish that can really spot patchy recruitment over time, and they're long-lived too. But other fisheries, not as contentious. But those are kind of the big ones that I'm more involved in.

Interviewer: Okay, perfect. So I think, like I probably said in the email, really the goal of our project very broadly is to understand the role of biodiversity in marine resource management. And so I'm wondering, is biodiversity a consideration in your decision making or is it something that you think about or you focus on when you're going through these areas of focus that you just outlined?

BD015: Yeah, so we think about it. I mean, obviously ground fish interact with invertebrate species and so forth, but I mean, a lot of our management plans are designed to be more single species focused, at least the ones I'm in. Like, we know like, halibut or pacific cod will eat invertebrates and, you know, but we don't really consider, we have no tools necessarily in our management plans to say, we're gonna use, we know these mini cod are out there, we suspect they eat this mini crab, we will use this as a conservative tool to try to set harvestable surplus for fishermen. So, but it's mostly - a lot of our systems designed right now, at least the ones I'm in are more single species focused. We know that there are interactions, but we just don’t have the tools and policy to really implement more of a standard ecosystem management design.

Interviewer: Gotcha. So are there policies or tools that you think could or should be implemented to better manage for biodiversity in the future?

BD015: I definitely think so. I mean, some of the ones I can think of that you could do now, well, it's kind of managing - so we can have allocative management plans. We see this, we have more like the lingcod, which is by user groups where it's highly allocative. Each user group gets their allocation of lingcod, but it doesn't take any consideration of their species. But we do have like, I think, I want to say bycatch, we bycatch provisions, mostly with rocInterviewerish where you kind of cap those interactions. So halibut is kind of a big one. We get a lot of bycatch of yelloweye rocInterviewerish, which I mentioned is proposed earlier, so that's kind of a contentious issue. So we try to minimize bycatch as much as possible. And the fleet's aware that the bycatch still does occur because the habitat's over left. So over this past Ford cycle, we really cleaned up our bycatch regulations where you have a thousand pounds of halibut You can only retain like 10% of that is like yellow eye rocInterviewerish. So only 100 pounds then the rest of it either has to be forfeited to the state of revenue or they can keep it for their own personal use. So we try to discourage that or prevent topping off behaviors when it's called or someone's fishing halibut And they'll do last set over rocInterviewerish to get some bycatch. Yeah, so we try to discourage that as much as possible so the bycatch does occur. And that's I guess would kind of get out your answer as far as biodiversity goes, but other than that There's not any other tools that I'm aware that we can employ, at least in the fishery pocket.

Interviewer: Yep, okay, so you mentioned when talking about bycatch the habitat overlap, so some of our previous work has been trying to build a framework for how do you think about biodiversity for marine resource management and These four bins have emerged within the definition of biodiversity and they are habitat forming species, species of conservation concern, key food web supporting species, and harmful organisms. And so I'm wondering if those are things that you think about when you're making decisions or in your system. And I can put those in the chat if that's helpful to visualize them.

BD015: I think habitat is probably the easiest one that we may consider. You know, like, you know, with rocInterviewerish, we know they're very specific, they don't move around a lot. They like rocky habitat, and you know halibut and lingcod overlap. We know those things occur and you're gonna get bycatch. Crab fishing, I mean we tried to design our gear to a degree where there's less bycatch, so pot here is really interesting in that, you know, with slinky potsmyou don't really get bycatch. When you're targeting black cod or even lingcod your bycatch of rocInterviewerish, it is pretty much zero from what we've seen in some surveys, which is really encouraging. For hook and line, you're laying out a line of hooks and you're targeting certain species based on hook size, but you're still going to get bycatch. So we know these habitats overlap quite a bit, but beyond that, we don't really take that into consideration as other items you listed off as far as making decisions go.

Interviewer: Okay, so not species of conservation, other food web supporting species, harmful organisms?

BD015: I mean species of conservation, I mean usually if that occurs, like we make closures, so at that point we make restrictions where you can't retain certain species.

Interviewer: Right. Okay. Okay, great. And then I think you started to mention before like some of the conflict with sport fisheries and commercial fisheries. So what stakeholders are most affected by these management actions when you're talking about public comment, like what stakeholders in your system are most affected and I would say have the most say in decision making as well or most involved politically in decision making?

BD015: So everyone technically has a set name because we have a lot of fisheries, we have subsistence fisheries, we have commercial and we have sport users. So the way our system design is we have like, you know, folks incoming the office, they can call us where I work in, I technically work in personal use, not sport, sport is defined as riding real and art regulation. So personal use is defined by Alaska residents, subsistence users, so, and then a commercial. So for my area work, I mostly work for commercial users, where we have industry meetings, we have a lot of industry meetings and division of commercial fisheries, so it's mostly designed for user users. We also attend multiple advisory committees where they try to get different people from different perspectives and user groups where we get feedback, but a lot of what we get communication on is from your commercial users. And then the support side of things, I'm not as involved in as much as this is a provision, but there is some charter interaction. So we really don't interact with, at least my experience has been, we don't really interact with substance users that much because my personal opinion is that our platform to do that does not match up with what those users need.

Interviewer: Okay, perfect. So for the rest of the interview, what I'm trying to do is to build what we call mental models with participants. And so I'm trying to first model the system that you work in as we've been talking about it and then if and how biodiversity is incorporated into that. And so I'm gonna share my screen. Let's see, I think I can just go like this. Let's see. All right, did that work? You can see it? Okay. Perfect. So have you are you familiar with this? Have you seen the software before?

BD015: This is this is all very new.

Interviewer: Okay, so no, okay cool. So, um, basically mental modeler is just a tool for us to conceptualize a given system and how an individual perceives it and so I'm gonna try to build out some concepts - first some system components based on the answers that you gave me to the questions that we went through and then the goal is to understand how those system components are connected to one another. So I'll ask you if for example crab to say like if crab was to increase how would that impact the other components in the system and then X Y and Z? So these can get really complex really quickly. So I think for simplicity sake we should pick one topic that you mentioned. I think maybe yelloweye rocInterviewerish might be a good one based on some of the answers you were saying.

BD015: Sure, that has a lot of interactions across species, habitat, and user groups.

Interviewer: So yeah, I think that's a good one. Okay, and then I'll just try to think through. So can you just remind me so I can make them nice and concise? Some of the management protocols that that you were talking about that are hot topics with yelloweye rocInterviewerish and that might relate to biodiversity. There's bycatch, right? Was part of...

BD015: Yes, bycatch and our halibut fishery.

Interviewer: Okay. Halibut commercial fishery. Bycatch. I'll just put that in a separate one.

BD015: And then we have a we've had declines in biomass leading to closures.

Interviewer: Okay. Okay. And then we were talking about stakeholder groups, we were talking about commercial fisheries. Commercial and charter. And charter.

BD015: Sport, sport, technically. Yeah, it's kind of your bigger one.

Interviewer: Okay. And then we were talking about the habitat-forming species, I think was the main one you were saying when we're talking about the components of biodiversity. Was there specific habitat?

BD015: Like rocky habitat. Yelloweye rocInterviewerish - so they overlap with you know halibut and lingcod. They don't really move a lot and they're very long-lived species.

Interviewer: Okay, okay, and that overlaps with halibut and lingcod. Okay, we have halibut there. Should we add lingcod fishery as well? Is that an important component?

BD015: We don't see as much bycatch in that fishery. Halibut is kind of the main one. That's the main hot topic.

Interviewer: Okay, great. Is there anything else that I'm forgetting on the things we were talking about? I mean, I know you said that, if I'm remembering correctly…

BD015: We have a survey, an ROV survey, that protects biomass.

Interviewer: Okay.

BD015: I think those are kind of the big ones.

Interviewer: Okay, right. Yeah, I can't, I don't think there's anything else that we talked about. And we can add as we go as well. Okay, so start with yelloweye rocInterviewerish. Okay, so as yelloweye rocInterviewerish, if yelloweye rocInterviewerish populations were to increase, would that impact any of these other components in the system?

BD015: If yelloweye were to increase, so the impact would be, most of those would be positive in that you likely on increases in biomass you’re likely to see increases in bycatch. Our biomass would go up in the ROV survey. It could likely lead to less restrictions in the commercial and sport fisheries where we could have directed fisheries depending on the degree of increase. Halibut fishery would be impacted because there'd be more bycatch technically. That's also tied into halibut quota too, so a little bit more complex. Declines in biomass would go away.

Interviewer: Okay, okay. Okay, so for each, so I'll start maybe with halibut, I think that'll be a good one. So for each relationship that you see, so I'll first ask you if it's positive or negative. So if yelloweye rocInterviewerish were to increase, you said, would that be a positive or negative impact on the halibut commercial fishery?

BD015: It would not negatively impact the Halibut commercial fishery.

Interviewer: Okay, but it wouldn't positively impact either?

BD015: I'd say no because it's a - that was kind of an interesting question. Would it negatively impact the Halibut commercial fishery? From that perspective, I would say no because they are then able to likely catch more bycatch, technically. If halibut quotas go up as well and there's more yelloweye than likely they're gonna get more bycatch. Which the user groups benefit from because then they can sell up to a certain amount. They're capped at a certain amount.

Interviewer: Gotcha. Okay, so we have bycatch as a concept. Are we calling that - is that yelloweye bycatch or is that bycatch regulations?

BD015: Just yelloweye.

Interviewer: Yeah. Okay, so I think what you just said - so as yelloweye increases, yelloweye bycatch would increase, right? And then that would impact the commercial. So it's not a direct relationship between yelloweye and halibut commercial. Maybe it's this indirect relationship.

BD015: Yeah, yes. I mean as fishery management change and there's an increase in rocInterviewerish or biomass then like there's going to be more bycatch available to be okay not to be obtained in other fisheries.

Interviewer: Right. Okay, so yelloweye rocInterviewerish has a positive impact, increases yelloweye bycatch, and then that would have a positive impact on the halibut commercial fishery because they benefit from the bycatch.

BD015: Yes, correct. Yeah, I mean, if biomass is increasing, then likely there'd be more bycatch to obtain which they can then obtain to a certain amount and then sell.

Interviewer: Okay, perfect. Okay, and so then, for some of the other connections, so as yelloweye rocInterviewerish increases, that would increase biomass from the ROV survey?

BD015: Yeah, yeah, that's what we used to assess biomass. So yeah, that would obviously increase if you saw increases. Sport fisheries and commercial fisheries would likely be positive 'cause it could lead to fishery openings from a previously closed fishery.

Interviewer: Yep, okay. And then declines in biomass…

BD015: Oh, I was gonna say there's no linkage to rocky habitat because it’s not really - that habitat is what it is. Declines in biomass would be, I guess would be negative in this because you're increasing. Right, is that the way to do it?

Interviewer: Yeah, 'cause as you're increasing, 'cause you're increasing yellow rocInterviewerish, you are decreasing declines, it's a double negative, right? You're decreasing declines in biomass.

BD015: Yeah, it took a little bit to kind of walk through that. So yeah, I think that's correct.

Interviewer: Okay, great. Okay, so then perfect. So if possible, so one of the other features that we can do with this tool is we can add weights to the relationships. And so if we did that, I would ask you if the relationship was a low, medium or high impact, and those are relative to one another. So it's to understand which relationships are driving the system dynamics essentially. If that's something that you feel you can do, then that would be great. But sometimes it's just not possible given the system components.

BD015: Yeah, totally.

Interviewer: Okay.

BD015: I think for starters, I think if you see an increase in the yelloweye rocInterviewerish, the biomass will increase, that'll be a high. The next one, the next line. ROV survey biomass, so that increases, that'd be high. And likely, the impact on sport commercial fisheries less restrictive would be high as well. Because that would lead us to make a management decision. I think yelloweye bycatch would probably be medium or low. A lot of bycatch is highly dependent on quotas and other fisheries and participation. So, for example, if even if you saw an increase in yelloweye biomass but the halibut quota decreased the following year, you may not see any change in yelloweye bycatch even though yelloweye biomass is increasing. So it's really dependent on also these other fishery quotas like halibut. So I'd probably call that a medium or low. Then the declines in biomass, it's an inverse relationship. So I guess that would be high.

Interviewer: Okay. Okay. Perfect. Okay, great. So then what we'll do is we'll just go through each of the components around the circle and just do the same exercise. So if yelloweye bycatch were to increase what would that impact in the system?

BD015: Yelloweye bycatch were to increase. I could do it for each one. Okay, yelloweye bycatch were to increase. I guess the halibut would be high for the halibut commercial fishery because they are the main ones so I guess I'd call that one high because they are typically the main user groups. Oh, for the commercial fisheries?

Interviewer: Yes.

BD015: Okay. Well, yeah, I guess I'm looking at the line from yelloweye bycatch to halibut commercial fisheries because if yelloweye bycatch increases, the relationship between the halibut fishery is likely going to be high because they are the main ones contributing to bycatch. So, I'd call that one high. yelloweye bycatch being high. There'd probably be a higher relationship in commercial fisheries, sport fisheries. I'd probably call that one medium. Sport users can be kind of selective in their gear, so they probably would see more as they're selecting other species. If yelloweye bycatch is high, I would assume the biomass then would also be, maybe I'd call that medium. Bycatch isn't necessarily a true indicator of biomass. Maybe I'd call that one medium. And then the last line - declines in biomass. I'd call that medium. I wanna call it high because bycatch isn't necessarily a good indicator of stock abundance, so I'd probably call it medium 'cause we just wanna know. But it'd be something to keep an eye on.

Interviewer: Okay, and so is that negative or positive again? 'Cause if you increase bycatch, then would you, you would increase or decrease the declines in biomass?

BD015: It'd be a medium increase.

Interviewer: Increase in cultures, right, perfect, okay.

BD015: This gets complex pretty quickly.

Interviewer: Yeah, I know. And this, you should see like some peoples are just, it's really hard to do them in an hour a lot of the time because they get really crazy really quickly. Okay. So then yelloweye, so was there anything else for yelloweye bycatch that we need to draw? If that was to increase, what would impact?

BD015: No, I think that covers it.

Interviewer: Okay, cool. So then what about if we increased biomass through the ROV survey?

BD015: So if I were to like, if you go to a sport commercial fisheries, that will likely be a high positive relationship. Because it could lead to fishery openings. It would be a, I guess a negative relationship in declines in biomass because biomass it's an inverse relationship.

Interviewer: Yep. Okay. That makes sense. Sorry, would that be a low, medium, or high relationship with declines in biomass?

BD015: I guess it would be high. One saying decline in biomass is leading to closures, the other says the relationship is high, so it would be, I guess, a higher relationship. Yelloweye bycatch, I would probably call that medium. It could lead to more bycatch, but I'd probably call it a medium. It's a one-for-one relationship. And then ROV survey biomass to halibut. I'd probably call that one a medium, too, because it's highly dependent on halibut fishery quotas. If they're gonna get more yelloweye - and then rocky habitat, I mean, that hasn't really changed.

Interviewer: Okay, and did we have... I just want to make sure... do we have a relationship from ROV survey for biomass to yelloweye rocInterviewerish? Is there...I think we have the arrow this way, but would that increase yelloweye rocInterviewerish? I just want to make sure.

BD015: Oh, yelloweye rocInterviewerish in general? Yeah, I mean that would be a high... that would be a high degree.

Interviewer: Okay. Perfect. Okay, so rocky habitat - if that was to increase...

BD015: So for rocky habitat, let's see. So that would be - I guess it would be high for yelloweye rocInterviewerish - they’re very habitat specific - so high positive for yelloweye rocInterviewerish. I guess the question is an increase in a rocky habitat? That one's kind of a weird one. Well, if it's an increase in rocky habitat, you assume that more yelloweye rocInterviewerish would go to there, so that I would probably say then you would probably see an increase high on sport commercial users because they’d have more spatial area to fish. As far as ROV survey goes, I probably call that medium positive because when we do a survey, we have kind of transects and so it kind of depends if we hit that new area or not, so I'd probably call it medium. More rocky habitat, more yelloweye rocInterviewerish is the assumption, so declines in biomass would go away. A halibut commercial fishery, that would probably be a medium positive relationship. Again more areas to fish potentially. And then rocky habitat to commercial fisheries that would be probably a high positive - more area to fish. Less localized depletion. Did I get all of them? Rocky habitat. Rocky habitat to yelloweye bycatch. Probably medium.

Interviewer: Okay. I think there were two weights that I want to check on. So Rocky habitat to declines in biomass. I know you said it was negative. Is that a high negative or a lower medium?

BD015: I guess medium.

Interviewer: Okay. And then what about rocky habitat to sport fisheries? I think that was positive, but what would the weight be on that one?

BD015: I'd say medium.

Interviewer: Medium, okay.

BD015: I'd only say that because you're assuming that maybe some users would go to new areas and find fish. So then they have more opportunity. That's the assumption.

Interviewer: Yep, okay. Okay, great. So sport fisheries. So it's kind of challenging to think about it with stakeholders, but if sport fisheries were to increase, what does that impact in the system?

BD015: Sport fisheries were to increase - you would probably see a decline in biomass, which I guess would be a high relationship.

Interviewer: That’s positive?

BD015: Yep, you would maybe see a medium impact on our commercial users.

Interviewer: And positive or negative?

BD015: Negative. We - the way the management plan is right now, we have an allocated management plan, so if sport fisheries increased, we would maybe take more restrictive management on the commercial side depending on what the biomass is. So yeah, user groups impact one another. So I'd probably call that a medium negative impact. ROV survey biomass, there may be less biomass. I'd probably call that a medium impact if you're catching more.

Interviewer: So negative medium.

BD015: Sport fisheries to yelloweye bycatch, you may not see, they can safely release the bycatch so there probably won't be an impact on that so I'd probably call that one low.

Interviewer: Low, low positive I guess because they're increasing bycatch?

BD015: Yeah, I guess it would be low positive so fishermen can release rocInterviewerish using a descender device safely so we know those work and they have the ability to do that so I'd call that low so even if they got bycatch they can safely release it even if they're exceeding their bag and possession limits. Let’s see - sport fishers to yelloweye rocInterviewerish in general - those fisheries increase, then likely you'd see a decline so I'd probably call it maybe medium. I want to call it high because there's other factors in place in this web. I'd call it medium. And then halibut commercial fishery that'd probably be a low impact. Those two fisheries aren't really tied together so I'd probably call it low. And then I'm gonna follow these lines here. I think we can do this. Oh yes that's way easier. So we have everything. Rocky habitat. Rocky habitat's the only other one so I don't really know if that would... if sport fisheries increase then you're not losing rocky habitat so I don't know if you can really put one there.

Interviewer: Okay. Perfect. So commercial fisheries.

BD015: Alright so if commercial fisheries increase that would negatively impact sport fisheries. I'd probably call that one a medium. Okay. you would likely see a decline in biomass. So positive. And yeah, and then I guess the negative towards ROV survey biomass would be medium as well.

Interviewer: Okay, sorry, was that medium for declines in biomass as well?

BD015: Yeah.

Interviewer: And that's positive because as commercial fishers increases, there's more closures, essentially.

BD015: Yeah, based on the history of the fishery, when we made an opening, a lot of times we make a closure right after because the stock needs time to recover or we rotate fisheries. So based on this species, it takes - you can take a long time to recover. So if you manage it more at a lower level, then maybe you can maintain it. But from my experience, you likely have a closure afterwards so it'd be a yeah in that light I'd probably call it medium because you just don't know. Yelloweye bycatch I might say medium. I mean we have our directed fisheries and then we have you know lingcod gets some and some other fisheries, but halibut - it's the big one so I'd call that commercial to yelloweye bycatch probably medium.

Interviewer: Positive because bycatch is increasing?

BD015: Yes, yes sorry. The commercial fisheries are increasing and then you have the halibut. So I guess the commercial fisheries are increasing then your halibut commercial fisheries are increasing at the same time so that'll probably be a high relationship. They're kind of tied together. And then commercial fisheries to yelloweye rocInterviewerish likely a medium, I'd say medium negative. You likely see yellow rocInterviewerish decline.

Interviewer: Okay. Okay, great. Let me just look. So then closures, I think, yeah, increase in closures essentially, right? With declines in biomass.

BD015: Okay, so an increase in closures, you would have a high negative impact on commercial and sport fisheries. Because they've lost access. Survey biomass may have a medium impact as the assumption is with a closure that you are stopping any further declines. And then I'd say.

Interviewer: Sorry, sorry, you said medium to ROV survey for biomass.

BD015: Yeah, the assumption is that if you make a closure that you're kind of stopping any further decline. So you're hoping that closure, I guess closures would decrease. Sorry, so it has to be opposite? Is that the way you think of it? So there's an increase in closures, you're assuming your biomass will increase as a reaction to those closures.

Interviewer: So that would be a positive. Yep.

BD015: Okay. So biomass to yelloweye bycatch…

Interviewer:: Yep

BD015: That may have a low impact because it is bycatch okay and same with the halibut fishery too and that would be positive like okay so increased closures are you increasing bycatch or decreasing bycatch you are closures don't really affect bycatch because it's only closed for say a directed fishery. So I guess it'd be low positive. Is that the way you're thinking it? Low positive. There's no neutral. So.

Interviewer: Right. Yeah. Yeah, neutral is no relationship. Yeah.

BD015: Yeah, I guess low positive would be the way to think of it. It's kind of a weird one. Increase in closures.

Interviewer: Would it have a small increase in bycatch?

BD015: Yeah, I mean, technically it would be neutral because bycatch still occurs regardless.

Interviewer: We can - we can take out that relationship if it's neutral.

BD015: Let me think this through. So decline in biomass. Well, no, I think it would be low because if you have low bycatch, technically, you've closed off those two other directed fisheries. So you probably have a low positive in bycatch because now there's more rocInterviewerish available to the other fisheries. Does that make sense? So you close off the two other user groups, sport and commercial. And now technically there's biomass available to be caught as bycatch. That's the way I would think about that. So, and then I would say the same declines in biomass, low positive for then halibut commercial fishery. And then closure to yelloweye rocInterviewerish. That would be, I guess you're hoping that those closures will increase positively at a high level for yelloweye rocInterviewerish.

Interviewer: And this is, so that just reminded me, so I need to just for my own sake, closures, this is yelloweye, we're talking about specific yelloweye closures.

BD015: Yeah, I mean, technically what we call them is demersal-shelf rocInterviewerish, which is an entire species assemblage. However, yelloweye is the main one caught and the more hot topic.

Interviewer: Okay. Right. I did know that. Okay. And same with the ROV survey biomass. We're talking about yelloweye biomass here?

BD015: Correct. Yep. Yeah. Yelloweye is the main focus.

Interviewer: Yeah. Great. Okay. Um, and for commercial and sport, we were talking about yelloweye commercial and sport, right, as well? Or were we talking general?

BD015: Yeah. So, so, you know, yelloweye. Yes, definitely. So commercial fisheries. I mean, yeah, yelloweye directed fishery. But I mean, there are also some other fisheries that do get bycatch. Well, I mean, so that commercial fisheries, if you do yelloweye commercial fisheries, that's a directed fishery, and if you go to yelloweye bycatch, there technically isn't yelloweye bycatch 'cause you're harvesting it in the directed fishery.

Interviewer: Oh, gotcha, okay.

BD015: So then that relationship would go away then at that point. Same with sport fisheries too.

Interviewer: So this relationship right here?

BD015: Yes, and then because there's no, there's no bycatch - you're targeting that species. So it is a sort of bycatch at that point.

Interviewer: Gotcha.

BD015: And the same with sport. Yeah, okay.

Interviewer: Okay, okay, great. Great.

BD015: And the halibut commercial fishery is fine because if you have a halibut commercial fishery that will lead to bycatch of the yelloweye.

Interviewer: Right, and I think we have that right or I guess we have bycatch. So we, okay, so we haven't done halibut commercial fishery. Did we finish declines in biomass?

BD015: Yes, I see all the boxes with an arrow.

Interviewer: Okay, okay, so then yes, so we don't have anything for halibut commercial fishery. Okay, so if that was to increase - so you're just saying for bycatch - that's the direct impact there.

BD015: Yes, and that'll be high. If halibut commercial fishery increases quota, then you're gonna get a higher relationship with yelloweye bycatch as there’s gonna be more yelloweye removed.

Interviewer: Okay, great. Okay

BD015: Well, I guess negative and then I guess a negative impact from halibut commercial fish to yelloweye rocInterviewerish. If that increases you likely see a - probably medium relationship. It's kind of dependent on if there's a direct good fishery or not.

Interviewer: Anything else for Halibut that it impacts?

BD015: Could you do the thing where you remove all the other arrows real quick?

Interviewer: Yep, absolutely. But I'll let me see which lines are drawn where. Okay, so we only did two. Well, if there's an increase in Halibut commercial fishery, which leads to more bycatch, and likely we will not have a commercial fishery. So that would be a probably medium negative impact. For the sport fishery, it likely would be low. Technically in our management plan, it does not affect that sport fishery. So it'd be low. And then, those lines are there. Declines in biomass. Could go up, maybe call that one medium. Medium and it's positive. And then, let's see. ROV survey biomass railway may go down, so probably medium negative. I think that's all of them.

Interviewer: Okay. Okay, great. I think that that is everything, right? We did, we started there. Perfect. Is there anything else before we stop that you think is really essential to have in this model, anything related to biodiversity that we've missed that maybe we should have talked about?

BD015: I mean, these are all about commercial fishery openings, closures, and the impact of the biomass. I think the other thing too is how you integrate policy, like policy meetings that change regulations that would impact all these at the same time. So if we had a change in policy, for instance, that may allocate fisheries or say right now, like yellow eyes closed off to all users, especially in sport fishery, policy can make a big impact, whether it be positive or negative, but I'm not quite sure how you would integrate it into this web, but I think it's important to mention.

Interviewer: Okay. You're saying like policy in general or a specific policy aside from like, I know we have closures and the bycatch in here or other policies.

BD015: I think policy in general. So, I mean, we generally have authority to close fisheries if we need to for conservation concerns, but when you have a larger sweeping policy that says, you know, in the extreme yellow, I mean, it may never be closed for Alaska residents. You can have policies like that. There's other things that so played out at Board of Fisheries meetings. It's not a clear answer, but it could have an impact.

Interviewer: Gotcha, okay, so like general policy that we couldn't incorporate probably into this map specifically, but just you're saying as like an umbrella.

BD015: Yeah, kind of more of an umbrella. Yeah, policy really drives. these things that we do.

Interviewer: Right, okay. Okay, great. I will stop sharing my screen. So that was the majority of the interview. I think I was gonna ask you just a few simple demographic questions if that's okay.

BD015: Yeah, totally.

Interviewer: But that was it. Okay, so I know, so how would you currently describe yourself as like A manager, practitioner, are you on the council at all, council voting member?

BD015: Oh, I'm a manager and a researcher is how I would describe myself. A researcher and management biologist.

Interviewer: Okay, researcher. And prior to working for the state, have you worked for the council or as a practitioner, an NGO and federal government, anything like that? Or have you been in the state for?

BD015: The state government has been my entire career. So I've been with the fishing game for 14 years. Started as a researcher in crab, and then got into management, and then I transferred over to ground fish, and then just continued to be promoted up, and now I oversee both projects that I used to work in.

Interviewer: Gotcha, okay, great. And are you a fisherman yourself? Do you participate in any marine recreational activities as a user?

BD015: Oh yeah, oh yeah. So I go recreational fish for like Dungy Crab or King Crab, and go jigging for rocInterviewerish in Halibut. Not a successful salmon, but yeah, I go out fishing and try.

Interviewer: Okay, okay, great. Okay, and then just scroll down. What is your highest level of education?

BD015: I have a master's degree in fisheries science.

Interviewer: In fisheries, so do you consider that natural science, social science interdisciplinary?

BD015: Oh, natural sciences.

Interviewer: And I think you just said, I was gonna ask how many years of experience you have in your field you said 14.

BD015: Yeah 14 years I started in 2009 so yeah 14.

Interviewer: Okay and then just what year were you born?

BD015: 1985 so I'm 38 getting older.

Interviewer: Okay that that is it those are all my questions.

BD015: Cool right on.

Interviewer: Perfect thank you so much. I really appreciate it. This is really helpful.

BD015: Yeah, definitely. I'm always happy to reach out and talk with folks. So I know we do a lot of cool stuff at Fish and Game. So yeah, always happy to help out wherever.

Interviewer: Yeah, I appreciate it.