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Discussions
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Interactive comment on "Observations of deep-sea fishes and mobile scavengers from the abyssal DISCOL experimental mining area" *by* Jeffrey C. Drazen et al.

Anonymous Referee #1

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Overall, I think this manuscript is very well-done and deserves to be published. The authors very carefully integrated previously-published and new data to give a comprehensive view of fish community recovery following experimental manganese nodule mining disturbance. The data are sound, and the manuscript is well-written. I have some minor and some medium comments, listed below.

Line 29: "relatively diverse" – in comparison to what? Is 16 taxa an average level of diversity for the abyssal Pacific?

Throughout: Please be consistent with English spelling. There are instances of "plow" and "plough" in the manuscript, so the authors should choose one and stick with it.

C1

Line 30: "Several years" is ambiguous, so please state the number of years.

Line 31: The authors state that fish density increased because of changes in regional environmental conditions, but they did not measure any environmental parameters in the present study. I expect this was a finding of the oft-cited Bluhm (2001) paper, but either way, it leaves the reader expecting environmental data throughout the paper. I would just remove the phrase "due to changes in regional environmental conditions" from the abstract.

Line 31: This is incredibly nit-picky, but it is improper to begin a sentence with digits.

Line 33: I'm not convinced that a lower abundance of the dominant species in disturbed areas by itself means there was only partial fish community recovery. My experience with disturbance-recovery studies is largely based on benthic invertebrates, which have very distinct community-level changes over time post-disturbance. There is early dominance by opportunistic species followed by an increase in species richness and finally a return to the pre-disturbance state. Is there any similar framework for fish? If so, I would love to see the authors cite previous fish disturbance-recovery studies to back up their claim of partial recovery. This could go in the discussion but be mentioned in the abstract as well.

Line 102: Please name the research vessel these cruises were on.

Line 115: The OFOS has been updated several times throughout the last 10 years, so please add in parentheses the manufacturer of the camera and lasers used. It would be also helpful to know which flash was used.

Line 130: Please give a measure of the spread (i.e. standard deviation) of the photo area.

Line 141: This transect-elimination method is confusing. It sounds like you assigned each photo a habitat type, then grouped all the photos from a single transect by habitat type, and if there weren't enough photos that you were likely to see at least one fish, you

C2

eliminated the transect-habitat type group? This paragraph could use some revision to be clearer.

Line 162: Why were there so many variations in the baited camera specs?

Line 163: Give a measure of spread (i.e. standard deviation) for the number of images per deployment.

Line 165: Time of first arrival is said to have been measured, but it is not presented in the text of the Results. What information does this metric give about each of the scavenging taxa?

Line 165 and throughout: The singular of "taxa" is "taxon."

Line 171: Why not use PERMANOVA to evaluate differences in community structure for the 1989 data as above for the 2015 data? PERMANOVA is more robust than ANOSIM.

Line 176: You should pick a consistent terminology for transect-habitat type groups. Define it in the paragraph at line 141 (along with a clear explanation of how some were eliminated), and use the term again here.

Line 203: The first two sentences of this paragraph belong in the discussion

Line 212: A significant interaction means that change over time was only significant in one habitat type. This sentence should be revised.

Line 212: Some information is missing from this sentence – which habitat had lower fish density?

Line 218: Can Bluhm be contacted or original data accessed? 2001 was not that long ago.

Line 292: "Neighborhood" is an ambiguous measure of scale. Please replace it with something more concrete.

Line 310: The fish community at large appears to have recovered from the disturbance because there is similar density and community composition of fishes, so the only finding for "partial recovery" is the low density of I. meadi over disturbed tracks. Again, I'm not convinced that this one result is sufficient to justify the conclusion of "partial recovery" of the fish community. If anything, I think it indicates "partial" or lack of recovery in the benthic infaunal community, which is I. meadi's food source. The fish are there – they're just hanging out where the food is. I think the authors should add additional justification for their conclusion of "partial recovery," potentially framing their findings in the framework of other fish community disturbance-recovery studies.

Line 382: The authors should cite one or more CCZ studies to back up the statements in the previous 3 sentences.

Section 4.3: What are the implications of the fish community overlap between the CCZ and DISCOL areas? Do the broad geographic ranges of fishes imply mined areas could be recolonized from elsewhere? Is it even known how far a given fish might swim to colonize a new area?

Tables: consider adding a few horizontal lines to aid visualization of the data, for example between titles and data and between different table sections

Table 1: It would be helpful if blank cells were filled with zeros so the reader could better keep track of the rows

Table 2: Persistence and time of first arrival data are not discussed at all in the manuscript. What is the importance of these metrics, and what information do they provide?

It would be helpful to have a table of PERMANOVA results.

Fig. 1: Add an inset giving the location of the study site in the eastern Pacific.

Fig. 3: Use colors consistent with Fig. 1 for the different habitat types

Fig. 3, 4, 5: Add tick marks on the outsides of axes for better visualization and consistency with Fig. 7