

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

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My coauthors and I would like to thank the reviewer for their constructive comments and criticisms of our paper. They carefully read our paper and caught a number of things that our internal reviews missed, raise some good questions which we address and our manuscript is much improved as a result. Our responses to each of the points raised by the reviewer are given below and the line numbers refer to the revised version of the manuscript.

Abstract Line 22. Replace "were performed beginning" with "were began". Sentence modified

C1

Line 28. Please state which years that abyssal fish surveys were conducted. The abstract would benefit from a clearer distinct of the DISCOL data analysed and when it was collected if possible. Date ranges have been added.

Line 33: I found that the reference to "regional environmental conditions" didn't fit as I could find no analysis of the data in relation to environmental parameters. Same comment as reviewer 1 and this phrase has been eliminated.

Lines 39 – 42: Separate the final sentence. Sentence separated

Introduction Lines 72 – 74. Long sentence. Consider revising and mentioning loss of prey items. Sentence separated.

Line 77 – 79. "constructing a biogeography" I found the meaning unclear. Consider revising sentence. We tried to clarify this sentence as follows "...it is important to characterize the fish community in regions that will likely experience mining in the near future and to begin constructing species ranges and community biogeographies,..."

Line 85. Include in the DISCOL region Added.

Lines 84 – 89. Consider separating. We separated the last phrase referring to the CCZ.

Methods Line 115. Can the details of the camera and the laser systems be briefly described. This is mentioned in the comments made to the other reviewer.

Lines 118 – 125. It would seem more correct to me to classify the level of physical disturbance by the known position in relation to the ploughs and EBS (if possible) than being manually assessment in the images. We disagree with this assessment. In most parts of the DEA the plough tracks are so dense that the accuracy of the acoustic positioning is not good enough to calculate the distance of the images to the plough and EBS. Visual confirmation was considered more reliable. With the images, it's clear whether we're looking at ploughs, EBS or undisturbed, or a combination of all. The disturbed regions are very distinct, but as very little is known about the plume generated

C2

during the disturbance, we cannot comment on how 'exposed' the locations just away from the tracks actually were. If currents were in a uniform direction, the seafloor areas downstream and upstream of the track would be differently exposed. Given the large number of tracks (78) across the DEA, probably all regions were exposed to suspended sediments to some degree. Thus we believe our categories and visual selection is the most efficient and appropriate.

Line 134. Missing open brackets The brackets are not missing but we realize this parenthetical phrase was a bit long so we have reworded the sentence and added one which was in parentheses before. It now reads "Images were manually annotated for fishes using a variety of published keys. For data on octopi see Purser et al., (2017) and for all invertebrates and benthic fauna see Marcon et al. submitted.

Lines 143 - 144. Repetition from earlier on how fish density was estimated. This repeated sentence was deleted.

Lines 145 - 150. I wasn't clear on the information on the transect areas with few images. I was unsure how you can tell if an image is likely or unlikely to detect a fish. Sounds like these transects were not used in the analysis so maybe not necessary to discuss them in detail. Reviewer 1 had a similar comment listed under line 141 and line 176 and we address this issue in those responses above.

Line 160. Please specify which type of bait was used. A single fish of ~500-1000g was used. We do not have records of which species was utilized but from the images the bait fish was a Carangid or Lutjanid. This is now indicated on line 163.

Line 168 - 169. I would recommend using a clearer definition of the criteria on how it was determined whether species were included or eliminated in the analysis. We had thought this was a clear definition – species that reside in the field of view are considered but those that crawl or drift through are not. To clarify we have provide some examples of species that were omitted from our annotations. These include medusa and holothurians, for instance.

C3

Line 171: I was not clear to me why PERMANOVA was used for the first analysis but ANOSIM for the second. See our response to this questions which reviewer 1 also raised.

Results Line 176. 46 habitats sampled – consider re-wording as sounds like there is 46 different habitat types. Reviewer 1 had a similar comment at the same place. See our response to reviewer 1's comment.

Table 1. *C. leptolepis*? (remove ?), unided fish (spell out in full) We have not removed the "?" from *C. leptolepis* as it represents some uncertainty in the identification of this taxon. We did spell out "unidentified fish."

Table 3. Some improvement can be made on the spacing of the headers. Adjusted.

Figure 6. I can recommend improvement be made on the presentation of some of the overexposed images in the plate. These images are not of the best resolution or quality due to the age of the photos (taken in 1982 and 1992) and the digitization process. However, we have attempted to increase image quality by sharpening the images and adjusting contrast/brightness.

Discussion Line 286. Our results, 26 years Comma added

The difference in the effects on sedentary and more mobile benthic-pelagic fauna is touched upon in the discussion. Something that was highlighted to me was whether it is possible to detect differences in mobile fauna (especially with baited underwater camera surveys) between some of the habitat treatments that are close together (i.e. undisturbed, EBS, Plough and Transition). I would think that some species could travel between the habitat types to reach the bait. Indeed, we agree! On lines 297 we state "It seems likely that the scavengers were attracted from a larger area that could have included the proximate reference or undisturbed areas. This could occur even if these animals were not commonly residing in the disturbance area due to habitat or prey community alteration."

C4

