Interactive comment on "Hypoxia in mangroves: occurrence and impact on valuable tropical fish habitat" *by* Alexia Dubuc et al.

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Dear Prof Rose,

We apologise if our responses were unclear as to what changes have been made. We carefully addressed each reviewer's comments and made the necessary changes to the manuscript. Please find below more details on the changes that have been made, especially regarding comments #3 and #9 of reviewer 1 and comment #1 of reviewer 2.

Reviewer 1:

Comment #3

Related, did in-forest sites bottom out during low tides? It looks as though they did in Fig. 2, for example, just after an ebb tide video period on 2/28/17. This would be an opportunity to investigate stranding patterns. Did all fish leave the site towards the end of this falling tide? That particular occasion was a relatively mild DO period (40-80% saturation), and so perhaps the effects of shallow water and low DO could be separated, at least anecdotally, if not statistically, on that date.

Response

To complete our response, the following sentence has been added to the manuscript to highlight this interesting suggestion: "Future targeted sampling could for instance specifically investigate fish movements at the end of ebbing tides experiencing relatively high DO and low DO, as on the 28 February afternoon and morning respectively. This would help to determine whether fish consistently leave mangrove habitats at a same depth or whether responses are indeed affected by DO levels abnormally low or high.", p.11, lines 3-6.

Comment #9

p. 5, Line 20, In the random forest model, what happens in the case of co-linear variables? Also, can RF account for interactions between predictors?

Response

To complete our response, the following sentence has been added to show that this issue was investigated and addressed: "DO and depth were highly correlated, which can potentially impact the RF prediction of variable importance, although there is no agreement on what the effects of multicollinearity are (Gregorutti et al., 2017). However, RF is a very robust method, and in this study, considering the large dataset used with only few predictors that are all relevant to explain fish assemblages, we believe that overfitting is not an issue. Nevertheless, a RF model was built only with "Depth", and then only with "DO" to test for the effect of multicollinearity on their relative importance.", p.8,

lines 9-14.

Reviewer 2:

Comment #1

For example, how could the correlation between DO and Depth affect the RF model? In the results section authors state that different models were created for each variable, but it is still unclear how the model is affected by this correlation.

Response

To complete our response, the following sentence has been added to show that this issue was investigated and addressed: "DO and depth were highly correlated, which can potentially impact the RF prediction of variable importance, although there is no agreement on what the effects of multicollinearity are (Gregorutti et al., 2017). However, RF is a very robust method, and in this study, considering the large dataset used with only few predictors that are all relevant to explain fish assemblages, we believe that overfitting is not an issue. Nevertheless, a RF model was built only with "Depth", and then only with "DO" to test for the effect of multicollinearity on their relative importance.", p.8, lines 9-14.

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