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

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Overall, I think this is a fantastic observational dataset of variation in fish communities during tidally driven variation in DO. The DO data themselves, sampled across a spatial gradient in the mangroves, are very interesting and nicely plotted. The authors recorded fish videos at an impressive number of sites and hours in this remote location, and identified a large number of fish species. The analysis is creative.

Spatial patterns in DO within the mangrove forest: p. 12, Line 8 notes no difference between in-forest and edge sites, however in the results, p. 7, Line 20 describes a difference in the frequency of DO <50% saturation in-forest and edge environments, with low DO observed more frequently in edge (channel) sites than in-forest. This

result surprised me, given that that the in-forest sites would have less water exchange than edge sites. Was this a true difference or not? If there was truly no difference, why do you think the expected pattern of lower DO in the forest than the channel was not observed?

Discussion section 4.1 "Tidal migrations: stranding or hypoxia?": The text does not answer the question in the section title. Low DO was correlated with the tidal cycle, so it is impossible to disentangle fish movements in response to tidal variation/depth relative to DO. This is carefully worded in the introduction, but not the abstract, which suggests that fish migrate due to low DO, rather than DO being a factor that may drive tidal migrations. The first discussion section would be stronger with a different section title.

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.

Discussion section 4.2 "Tidal-induced dissolved oxygen variations" presents two processes that reduce DO in mangrove waters: 1) diel cycles that are the result of dominance of photosynthesis effects during daylight hours and respiration at night, and 2) tidal pumping of porewater into the water column on ebbing tides. These two processes should be better distinguished within the introduction and discussion sections. Separating discussion of the two factors and their relevance to this study (for which fish data is daytime-only) into separate paragraphs would be helpful.

The discussion section on "4.3 Species-specific responses to DO variations" highlights some very important results from this study. However, there is a missed opportunity that no species are specifically discussed. What can be said about the fish species,

genera, or families observed in the high, medium, and low tolerance behavioral groups identified?

Minor comments

Please add a legend to the map in Fig. 1.

p. 3, Line 6, "implying that mangrove forests are especially vulnerable to anthropogenic deoxygenation due to their location along the coasts" – I would say, "the aquatic communities within mangrove forests" are vulnerable, since the mangrove forests themselves are fairly resistant to deoxygenation as low DO does not negatively affect the foundation species of mangroves, and the forest itself can withstand low DO stress quite well.

p. 4, Line 28, What does VLC stand for?

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?

p. 5, Line 30, Please explain "out-of-bag error."

p. 10, Line 16, Tidal period is generally defined as high to high or low to low. High to low would be half of a period.

p. 11, Line 21, parenthetical "High tolerance pattern" is confusing. I suggest "(i.e. most species exhibited the "High tolerance" pattern)."

p. 12, Line 15, it seems like "value" of mangroves, here, implies that fish diversity or abundance is a proxy for mangrove forest value? Please clarify.