Stony Brook University

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Dr. Joerg Heber
Editor-in-Chief
PLoS ONE

Dear Dr. Heber,

We are pleased to re-submit our manuscript, entitled "Aerial-trained deep learning networks for surveying cetaceans from satellite imagery," with revisions suggested by Reviewer 4. In this version we have included several non-neural network approaches for comparison and have cleared up a confusing element identified by the Reviewer. We have further clarified our experimental approach to selecting a learning rate for our models, updated two figures, and added a supplement. We also confirm the accuracy of this statement:

"All relevant data are within the manuscript and Supporting Information files.Satellite imagery is licensed from Digital Globe and cannot be distributed by the authors, but can be acquired directly from Digital Globe (https://www.digitalglobe.com/). All downsampled aerial imagery and scripts are available on GitHub (DOI: 10.5281/zenodo.3356970). S9 File, S10 File, and S11 File include the data required to reproduce plots and the statistics cited"

One of the Reviewer's chief concerns is that, as a new application, this method must be compared to previous methods. We have added SVM approaches now which we hope will satisfy this concern. Importantly however, the field of marine mammal biology relies almost exclusively on visual field surveys. These are not readily comparable to this method as they are conducted in transects and sample the surface population of individuals as opposed to this approach, which can detect individuals over a vast expanse of ocean. Moreover, we do not intend it as a replacement of these field surveys but rather a means of improving, augmenting, or supplementing them in a field with typically high-cost field work and limited funding. We have included extensive discussion of this in the Introduction and Discussion and hope that, combined with our inclusion of further classification methods, this will ameliorate any remaining concerns about the comparability of this method.

We are grateful for the comments from Reviewer 4 and believe this manuscript addresses all the remaining concerns. The manuscript is now 26 pages in length, with 4935 words of body text, 185 words of abstract, and includes 3 tables, 5 figures, and 56 cited references. We have submitted our figures to PACE and have uploaded the versions we have downloaded from PACE. All authors have approved this revised manuscript.

Sincerely,

Alex Borowicz (for all authors)