Question & Answer Sheet

Advances in Habitat Suitability Modeling and Range-mapping
to Support Conservation Decisions

Virtual BWB · 5/7/2020

QUESTION	ANSWER(S)
How were you able to find expert reviews for almost 2500 species? Were the reviewers volunteers, or was funding to support there efforts part of the project, or were they volunteers?	We currently have ~90 expert reviewed signed on and hope to review as many species as possible by fall 2020. As a not-for-profit project unfortunately we do not have funding to provide remuneration for the expert review work. We greatly appreciate the contributions of our reviewers to the creation of range maps that will be publicly accessible at no cost.
Are you doing any ground truthing to validate that the species are actually in those areas? Or solely expert review?	EBAR ranges are generated using species occurrence data (e.g. NatureServe Element Occurrences, museum specimens, iNaturalist records). These auto-generated ranges are then expert reviewed.
Would EBAR be useful to do MoBI-style models in Canada and Ak?	Absolutely. The EBAR data would be fantastic for defining the modeling extent, which was one of our early challenges and something that can significantly impact the end results. We wish we had EBAR-style range maps for all the MoBI species. Data used for EBAR and reviewers identified would also support the effort.
Where are the next steps geographically for MoBI? Mexico, Canada or AK? Is the project continuing?	We'd absolutely love to expand to new geographies, but would need to identify more funding to do so, which we currently do not have. We'd welcome ideas for collaborative proposals.
How do you choose environmental predicators that are most relevant to each species?	At this point, we allow the modeling algorithms to choose the most important/useful environmental predictors and only use the most important ones in the final model
At what management scale to you believe these models should be applied?	The MoBI models truly are "first generation" and most are not appropriate for use for fine scale management until they have been fully reviewed (though as I mentioned, the review process indicates high confidence in the accuracy of at least 500+). For these, and other precise models, they can be used at relatively fine scales to locate areas of potential habitat (or areas unlikely to support the species, which is also often of value) though they are still just hypotheses and field validation will be necessary for high stakes decisions. The models themselves are 30m resolution, or NHD stream reach for aquatics (a few wider ranging spp were 330m-res)
Are the HSM and computational infrastructure team still engaged on the MoBI project and/or available for consultation for use/adaptation outside the us?	MoBI itself has largely wrapped up but we are still highly involved in figuring out how to best utilize the infrastructure going forward for continued HSM efforts and have continued Microsoft AI for Earth support for the

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	infrastructure. Definitely would be interested in talking further.
1) how well does this model work with species that have a really large home range such as moose? 2) does it also differentiate between winter range and summer range?	Species with large home ranges and those that are wide ranging are more difficult, for sure. Different algorithms handle these kinds of problems differently, which is why adding ensembles is right up there in our priority. 2) It is up to us to decide whether to differentiate between winter and summer --- by modeling each as different models (with different inputs) or not. We did apply that idea for birds: used nesting locations (and observations during breeding dates) only.
Could MoBI tools be used for invasive species modeling?	Short answer - yes. The methods and predictor data inputs are largely transferable.
What is a HUC?	hydrologic unit - just the name of the US nested watershed units. There are equivalent units in Canada and there are ongoing efforts to harmonize the data across the US-Canada border.
Do you know of MoBI experiences in central America?	I don't have specific examples from Central America, but NatureServe has completed projects in the Tropical Andes using similar processes. The methods are widely transferable - just need to identify available species locality and environmental predictor data for new geographies
Is the Oregon reviewer source code shared on GitHub or similar? The EBAR project is interested in seeing the multi-select code.	We have not posted our code to GitHub yet, but plan to. I will ask Marc Remple, who revised the code for us, to contact you.
The MoBI review tool is a game changer for mapping! Oregon showed the way to EBAR and all should do this to make more range maps that could be used for more models!	
Salvanatura would be interested in applying MoBI in El Salvador	Would be great to talk further - we could set up a call with Miguel Fernadez perhaps.
Thanks! So the predictors used, chosen by the modelling algorithms, are species-specific right?	Yes, for each species, the algorithm tests the importance of each variable and then we drop the variables that aren't important for modeling that species. Thus, the number and identity of variables used in each model differ based on characteristics about that species' spatial footprint.