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Running Title: SDM in SW Atlantic Ocean

**Species distribution modelling in the Southwestern Atlantic Ocean: trends and systematic review**

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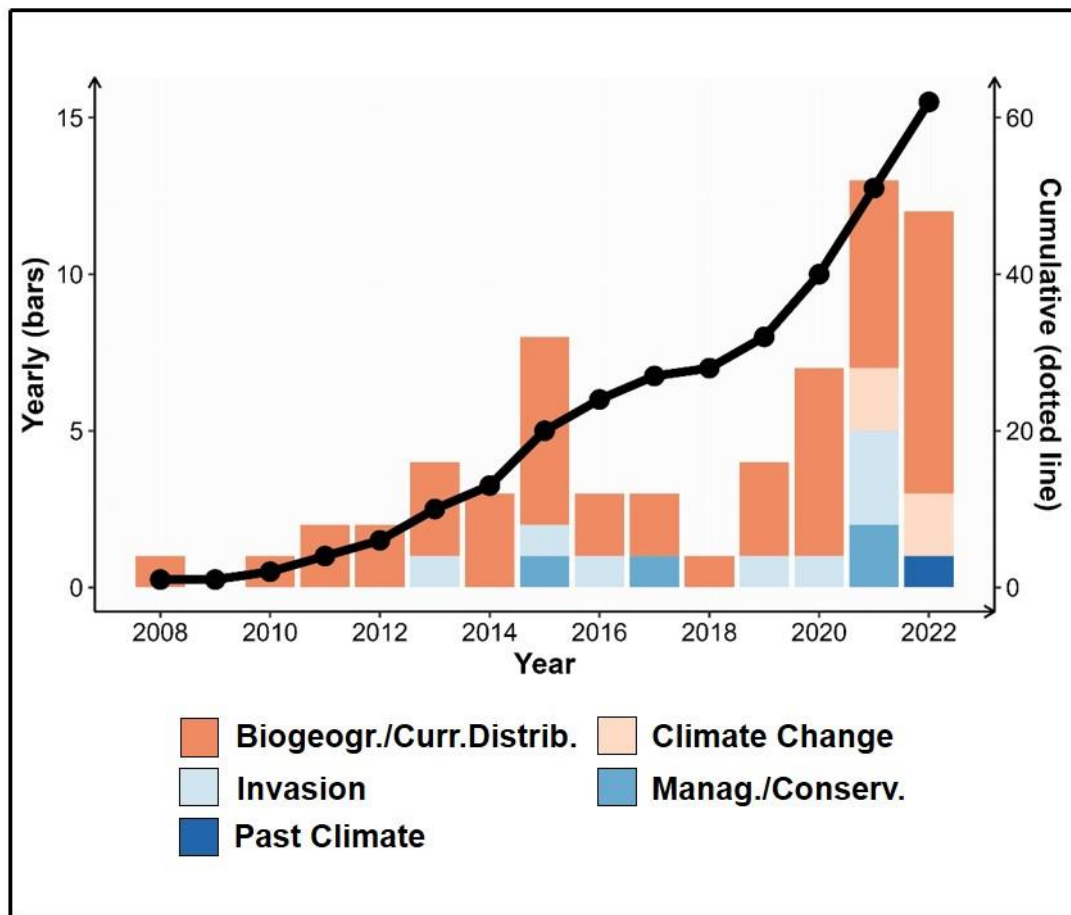
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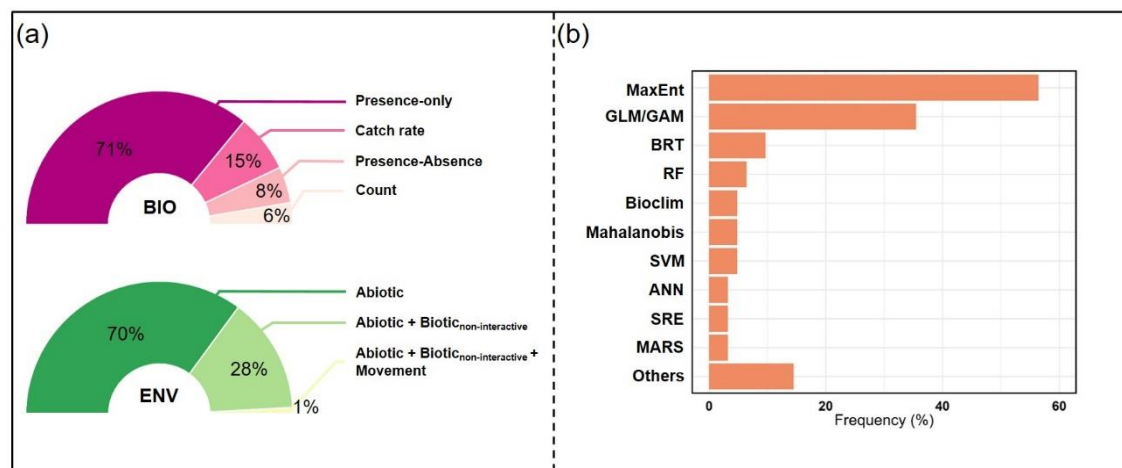
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**Supplementary Material 2**

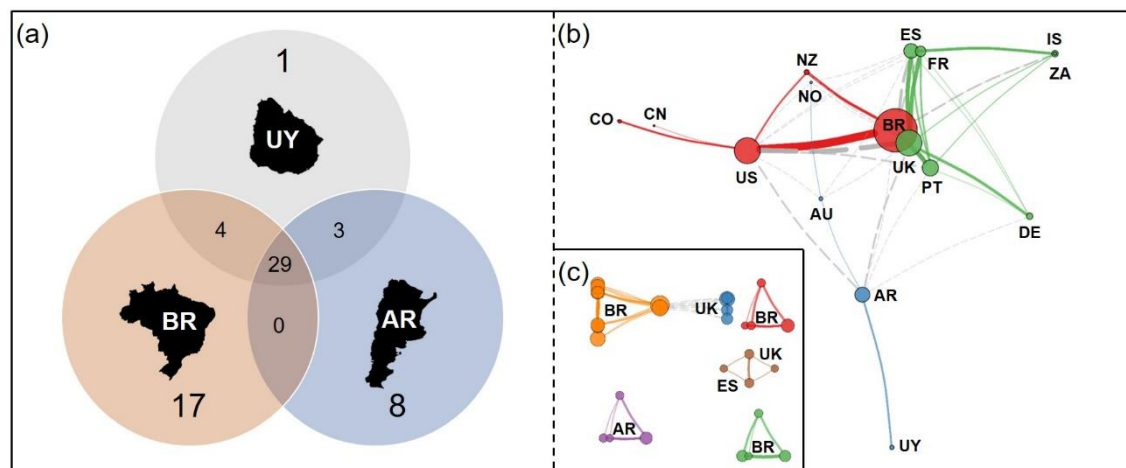


**Figure 1.** Yearly and cumulative number of articles among five focuses of research applying species distribution modelling in the Southwestern Atlantic Ocean.

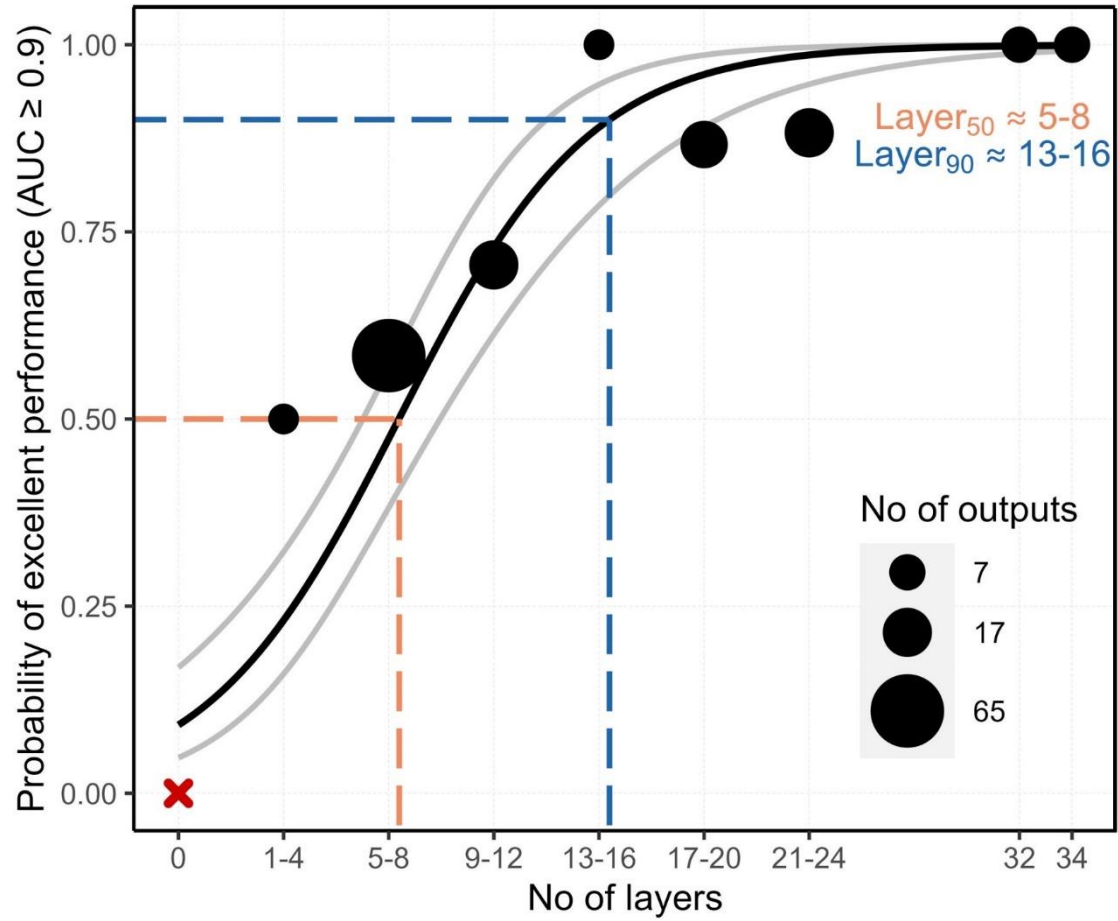




**Figure 3.** The most frequent choices of (a) biological (BIO) and (b) environmental (ENV) data used in species distribution models applied in the Southwestern Atlantic Ocean. In (b), analytical methods applied are Maximum Entropy – MaxEnt; Generalized Linear/Additive Models – GLM/GAM; Boosted Regression Trees – BRT; Random Forest – RF; Bioclim; Mahalanobis distance; Support Vector Machines – SVM; Artificial Neural Network – ANN; Surface Range Envelope – SRE; Multiple Adaptive Regression Splines – MARS; and others – which includes Classification and Regression Tree, Domain, Ecological Niche Factor Analysis, Flexible Discriminant Analysis, Gower, Habitat Suitability Index, MaxLike, Minimum-Volume Ellipsoids, Non-parametric Probabilistic Environmental Niche.



**Figure 4.** (a) Venn diagram showing countries where species distribution modelling results were predicted over in the Southwestern Atlantic Ocean (Uruguay – UY, Brazil – BR, Argentina – AR); and the collaboration network among (b) countries and (c) authors of the reviewed articles (list of countries abbreviation available at [https://www.nationsonline.org/oneworld/country\\_code\\_list.htm](https://www.nationsonline.org/oneworld/country_code_list.htm)). An expanded version of (c) can be found in the Supplementary Material (Figure S2).



**Figure 5.** Probability of excellent model performance given the number of layers, based on a Binomial Generalized Linear Model (BGLM). Dots are the number of successes in  $N$  trials (i.e. number of outputs with  $\text{AUC} \geq 0.9$  over the total number of outputs), dots sizes are proportional to the total number of outputs, solid lines are the model probability predictions (average in black and confidence intervals in grey), and dashed lines indicate the probabilities of 50% (Layer<sub>50</sub>) and 90% (Layer<sub>90</sub>). We assumed a zero probability of excellent performance if zero layers are specified in the models (red cross).

**Table S4.** Top-10 journal publishing about SDM in SWAO, among the 62 retained articles, their impact factor and h-index.

<b>Journal</b>	<b>Number of articles</b>	<b>IF †</b>	<b>h-index</b>
Journal of Biogeography	4	3.91	158
Marine Ecology Progress Series	4	2.92	188
Plos One	4	3.70	332
Frontiers in Marine Science	3	5.25	85
Animal Conservation	2	3.40	222
Canadian Journal of Fisheries and aquatic Sciences	2	3.10	153
Estuarine, Coastal and Shelf Science	2	2.84	134
Fisheries Oceanography	2	2.67	80
ICES Journal of Marine Science	2	3.91	117
Journal of Experimental Marine Biology and Ecology	2	2.48	137

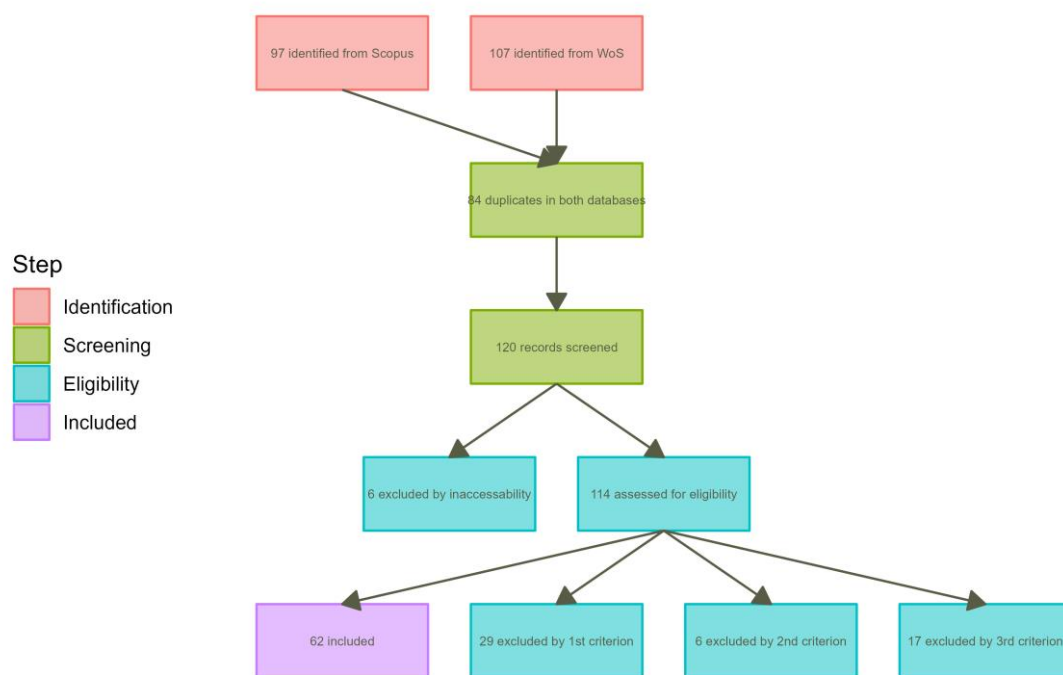
†: Impact Factor of 2022 (JCR)

**Table S5.** Top-10 most cited articles about SDM in SWAO, among the 62 retained articles, their authors, journal, publication year and DOI.

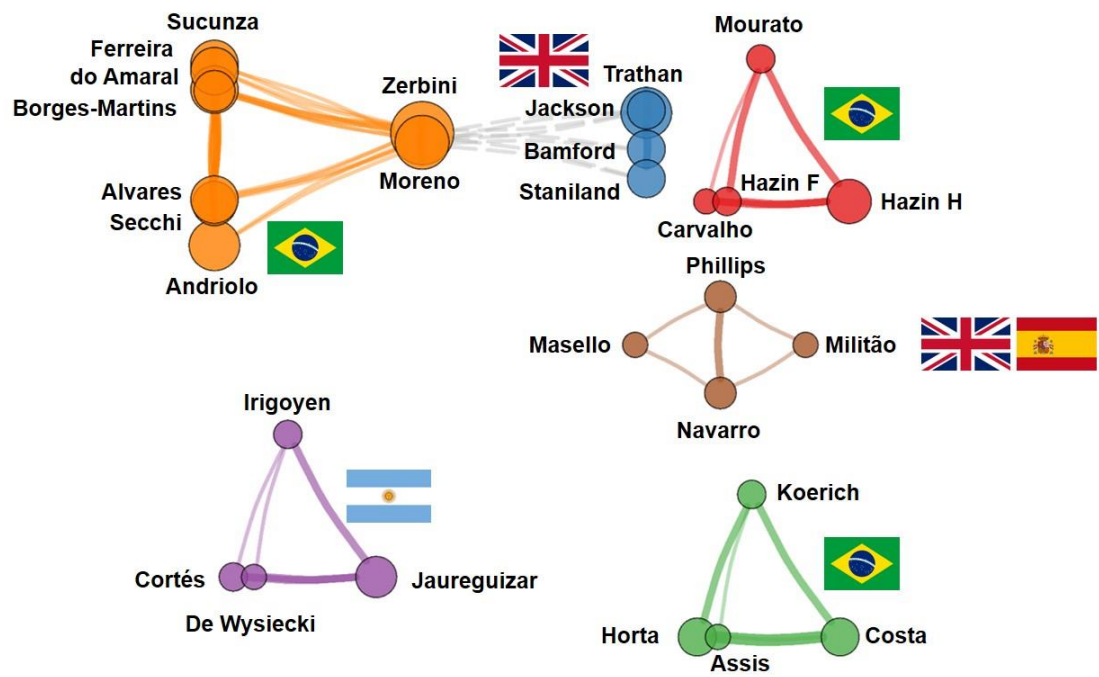
Article title	Authors	Journal	Year	doi	citations †
Global habitat suitability of cold-water octocorals	Yesson et al.	Journal of Biogeography	2012	10.1111/j.1365-2699.2011.02681.x	137
Year-round distribution suggests spatial segregation of two small petrel species in the South Atlantic	Quillfeldt et al.	Journal of Biogeography	2013	10.1111/jbi.12008	55
Oceanographic changes and exploitation drive the spatio-temporal dynamics of Atlantic bluefin tuna ( <i>Thunnus thynnus</i> )	Fromentin et al.	Fisheries Oceanography	2014	10.1111/fog.12050	49
Invasive potential of the coral <i>Tubastraea coccinea</i> in the southwest Atlantic	Riul et al.	Marine Ecology Progress Series	2013	10.3354/meps10200	43
Habitat suitability analysis and identification of potential fishing grounds for swordfish, <i>Xiphias gladius</i> , in the South Atlantic Ocean	Chang et al.	International Journal of Remote Sensing	2012	10.1080/01431161.2012.685980	40
Leapfrog migration and habitat preferences of a small oceanic seabird, Bulwer's petrel ( <i>Bulweria bulwerii</i> )	Ramos et al.	Journal of Biogeography	2015	10.1111/jbi.12541	40
Spatial predictions of blue shark ( <i>Prionace glauca</i> ) catch rate and catch probability of juveniles in the Southwest Atlantic	Carvalho et al.	ICES Journal of Marine Science	2011	10.1093/icesjms/fsr047	37
Ecological niche modeling of <i>Stenella</i> dolphins (Cetartiodactyla: Delphinidae) in the southwestern Atlantic Ocean	do Amaral et al.	Journal of Experimental Marine Biology and Ecology	2015	10.1016/j.jembe.2015.07.013	36
Predicting species distribution from fishers' local ecological knowledge: a new alternative for data-poor management	Lopes et al.	Canadian Journal of Fisheries and aquatic Sciences	2019	10.1139/cjfas-2018-0148	33
Staying ahead of invaders: using species distribution modeling to predict alien species' potential niche shifts	Battini et al.	Marine Ecology Progress Series	2019	10.3354/meps12878	22

†: updated on the 10th of May 2023





**Figure S1.** PRISMA diagram showing the numbers from the identified literature to their inclusion in the bibliometric analyses.



**Figure S2.** Expanded collaboration network among the 30 most frequent authors, accessed through the coauthors' affiliations.