Identifying animal species in the Holocene Saharan rock art to inform Habitat Suitability Models

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Background

The Holocene Sahara was the setting for the last major global climate change event before the current one (ca. 8000-4500 BP). Understanding the interplay between humans, animals and the environment at that time can potentially answer many questions about climate change in the future. Habitat Suitability Models are increasingly used to predict species distributions; however, for these models to generate accurate predictions, they must be informed by reliable presence-absence datasets. The identification of fauna in prehistoric rock art represents an untapped yet extraordinarily rich source of such data.

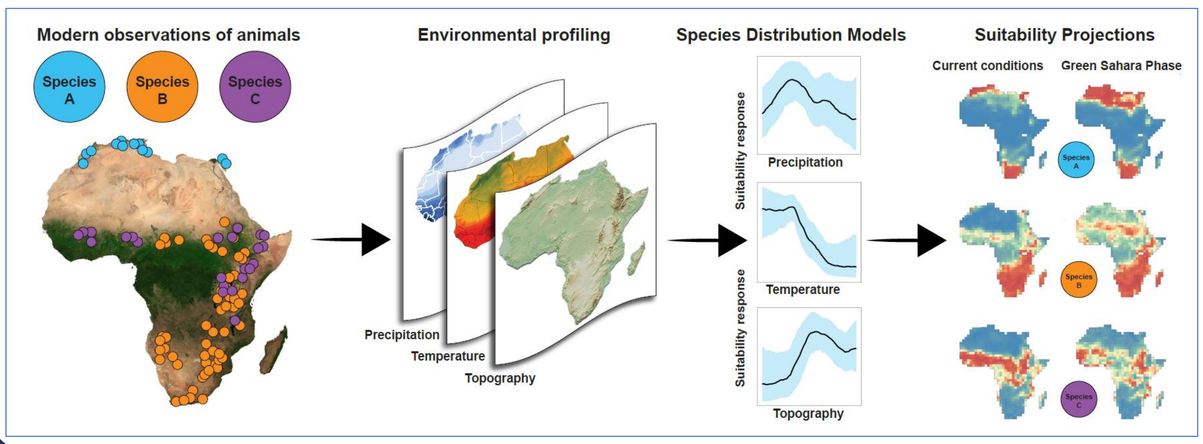


Research Questions

1) What animals were depicted in Holocene rock art of the Sahara Desert?
2) Does the recorded assemblage of species coincide with what Habitat Suitability Models predict?

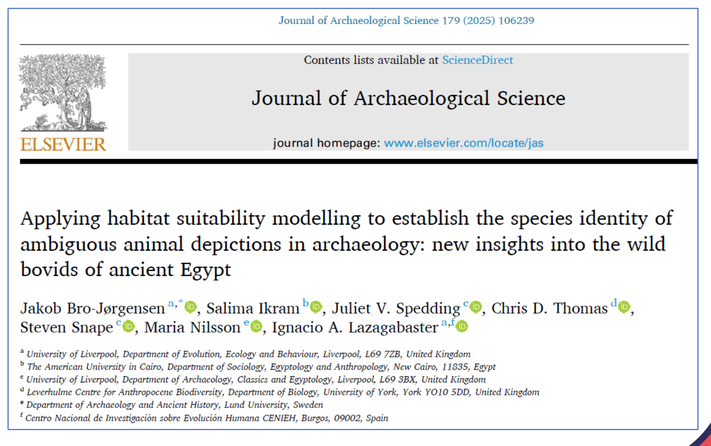
Methods

① Species Distribution Models = Habitat Suitability Models



② 3-Step Method of Identification (Bro-Jorgensen et al. 2025)

1) Anatomical Description and candidate species shortlisting
2) Cross-referencing with zooarchaeology and literature
3) Evaluation against Habitat Suitability Models



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Applying habitat suitability modelling to establish the species identity of ambiguous animal depictions in archaeology: new insights into the wild bovids of ancient Egypt

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Results (Workflow)

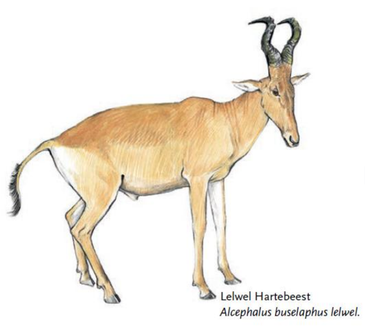
① Shortlist possible species



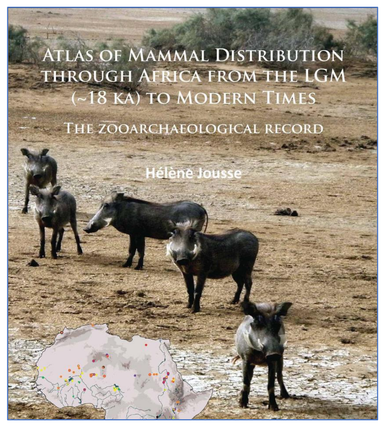
Bohor reedbuck (Redunca redunca)

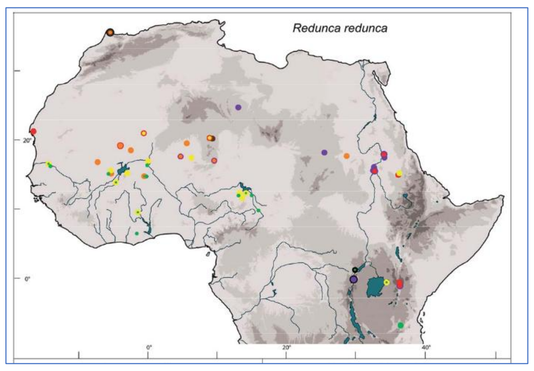


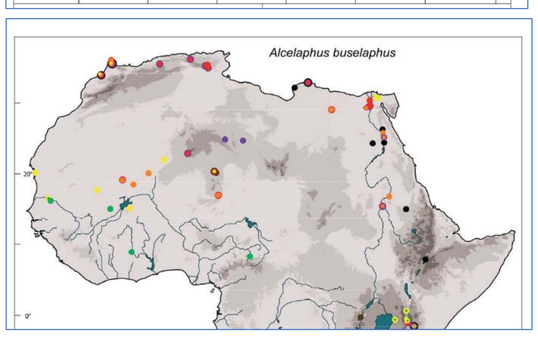
Hartebeest (Alcelaphus buselaphus)



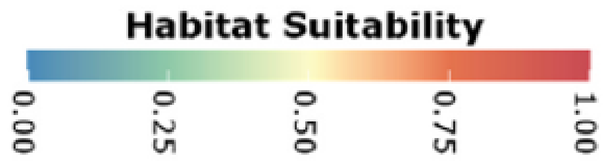
② Compare with zooarchaeological record

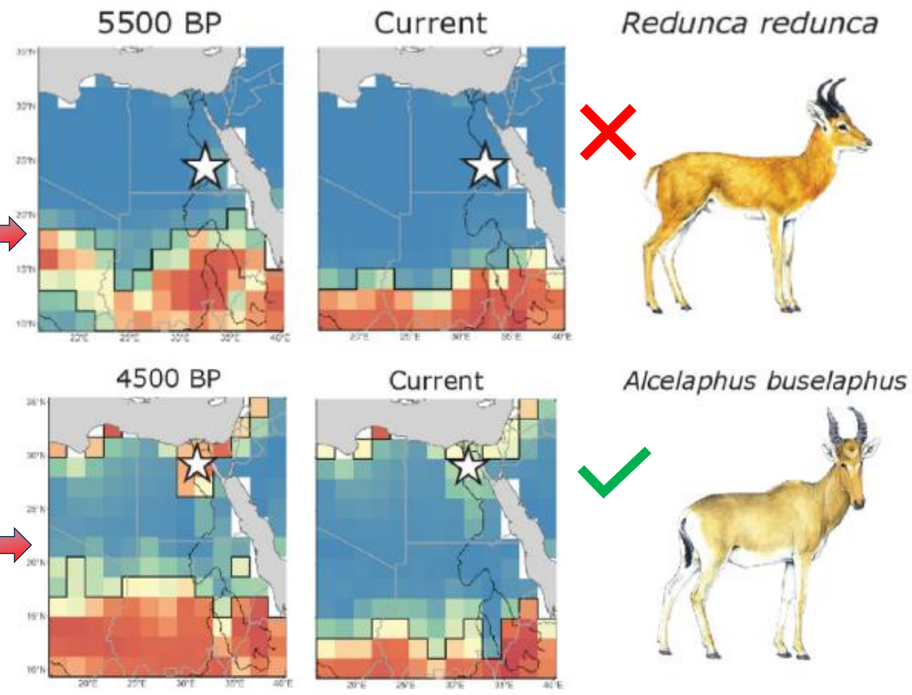






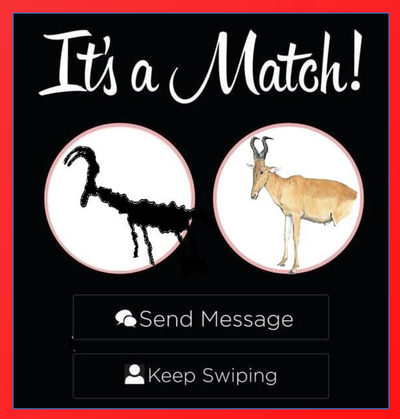
③ Validate with Habitat Suitability Models





Conclusions

- In this particular case, the three-step identification method demonstrates high consistency and certainty across diverse lines of evidence.
- Prehistoric rock art constitutes a robust, valid dataset for cross-referencing and informing Habitat Suitability Models.



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