



# iNatator: Obtaining Expert Feedback on Species Ranges

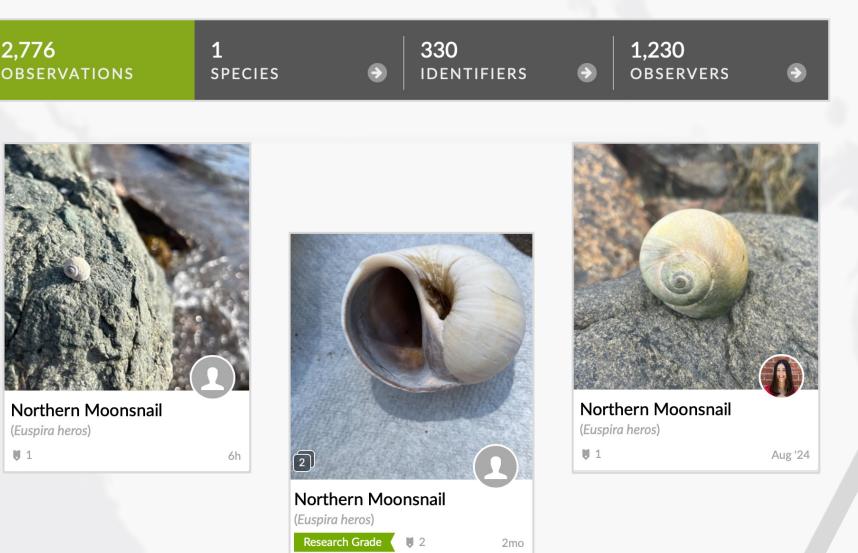
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## Motivation

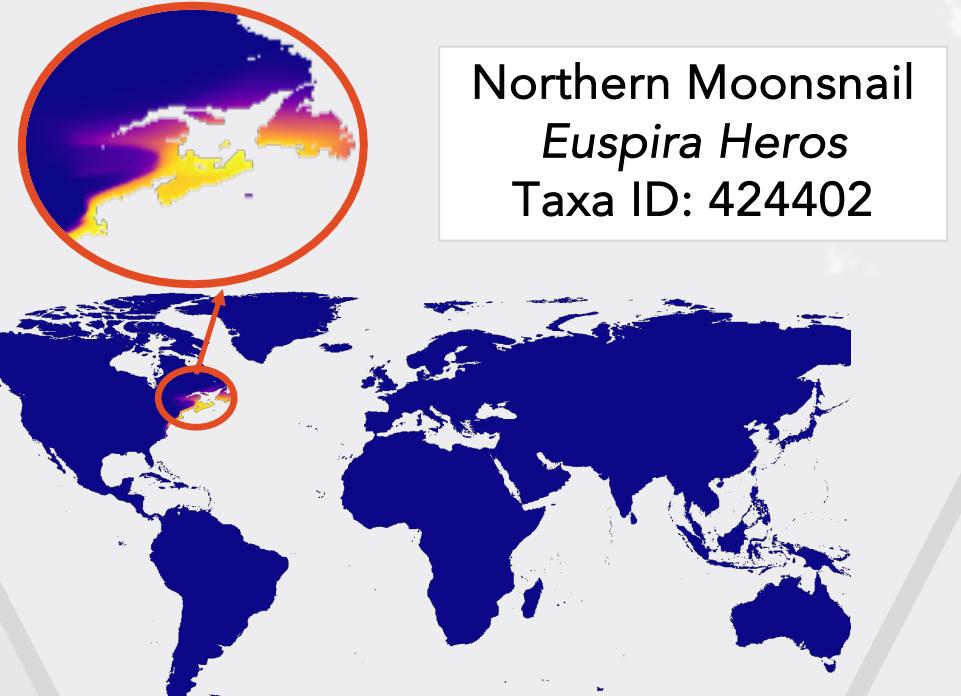
### What is iNaturalist?

Social network where people share biodiversity information by posting observations and tagging species

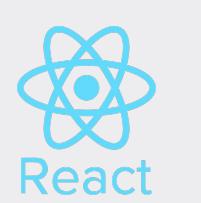


### What is the GeoModel?

A neural network ML model trained on iNaturalist observations to predict the likelihood of a species being present at a location<sup>1, 2</sup>.



## Tech-Stack



Java-Script  
based Front-end



Python based  
Back-end



Deployment and  
containerization



Interactive map and  
annotation tools



Data  
Storage

**"We want experts that understand species range maps to share their knowledge to incorporate it into the GeoModel and improve species ranges predictions"**

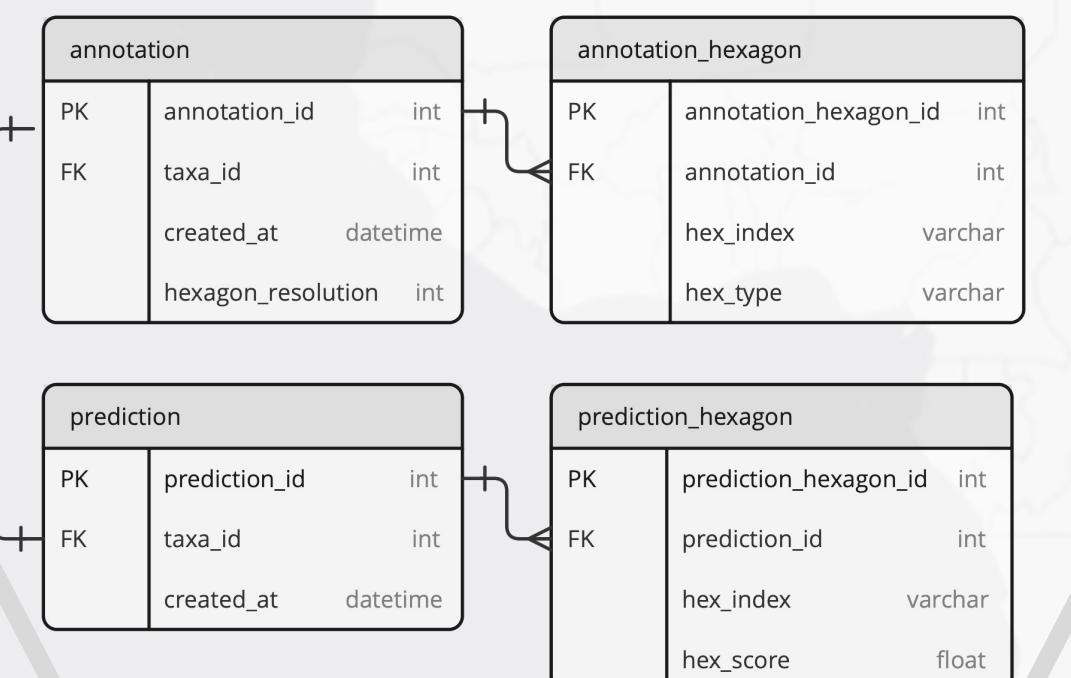
## Contribution

We created a platform that allows obtaining expert feedback through annotations of species ranges in an interactive map.

Experts can select **green** hexagons as presence and **red** hexagons as absence in the map, according to their expertise

## Database

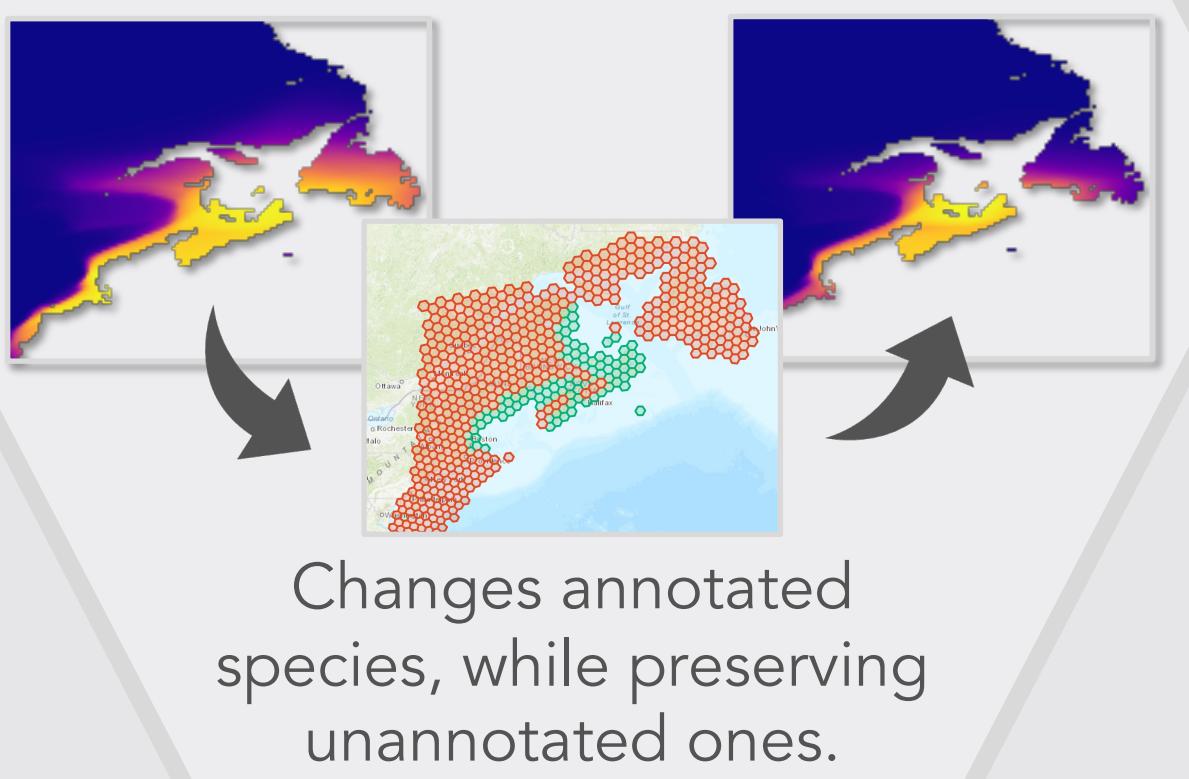
We designed and implemented a database to store annotations...



... and precomputed GeoModel predictions

## Fine-tuning

Annotations used to fine-tune the model and correct predictions by retraining last layer



Start annotation from: **Geomodel prediction given a threshold** **Previously saved annotation** **Empty map**

1 Search species by common name or Taxa ID

2 Tools to select or deselect multiple hexagons at the time

3 Annotate by selecting and deselecting presence (**green**) and absence (**red**) hexagons, according to your species range expertise

4 Once you finish annotating, **save your progress**

**Additional Layers**

**References**

[1] Cole, Elijah, et al. "Spatial implicit neural representations for global-scale species mapping." *International Conference on Machine Learning*. PMLR, 2023.

[2] Lorie, Scott. (2023, September 21). Introducing the iNaturalist Geomodel [Blog post]. Retrieved from <https://www.inaturalist.org/posts/84677>