

Analysis and Geovisualization of Biodiversity Monitoring Data

Ella CHRISTIE - Copernicus Masters in Digital Earth



Introduction and Objectives

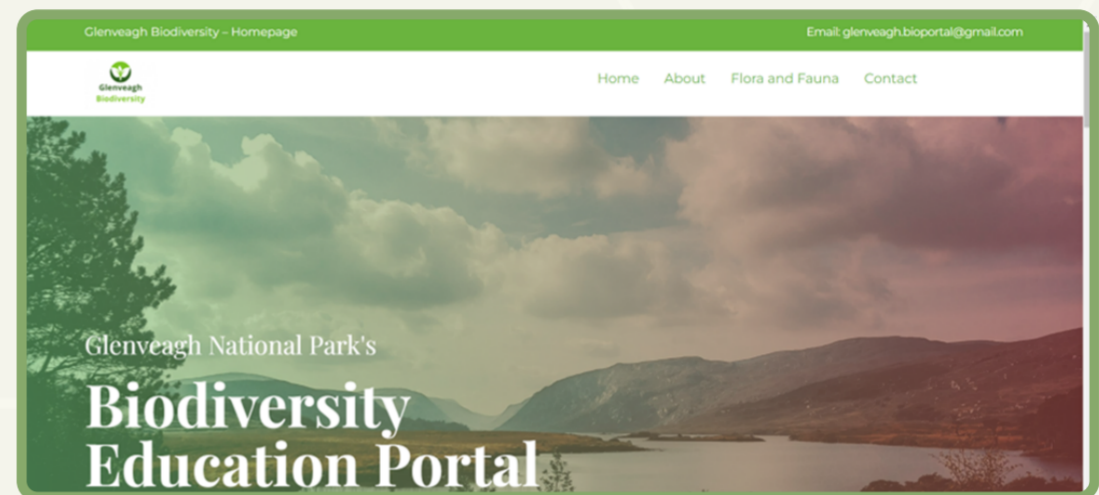
The main goal of the diploma thesis is to analyse the available data on the biodiversity of wild species and then perform a suitable geovisualization of the analysis results and perform knowledge gained interpretation. The student will focus on the educational potential.

National parks are a stronghold for preserving natural habitats and the wildlife that resides in it. Environmental education is a key method of communicating the importance of conservation and raising awareness to local biodiversity and the threats they face.

Biodiversity and environmental data can be highly complex and copious in quantity. Therefore, simplifying and condensing this data in an appealing manner is essential to educating the general public on the importance of their local wildlife and landscapes.

Results

The final output of this diploma thesis was an educational web-platform containing interactive features using geovisualization techniques informing the users about local biodiversity and selected geo-aspects. A well-structured, simple to navigate, interactive and highly visual website was created to host the information and resources created for this project. The website and its accompanying resources were the main output of this thesis project. 20 species profiles and 22 children's activities and learning resources, a Glenveagh National Park StoryMap presentation, six interactive maps, and 20 static maps were created for this project.

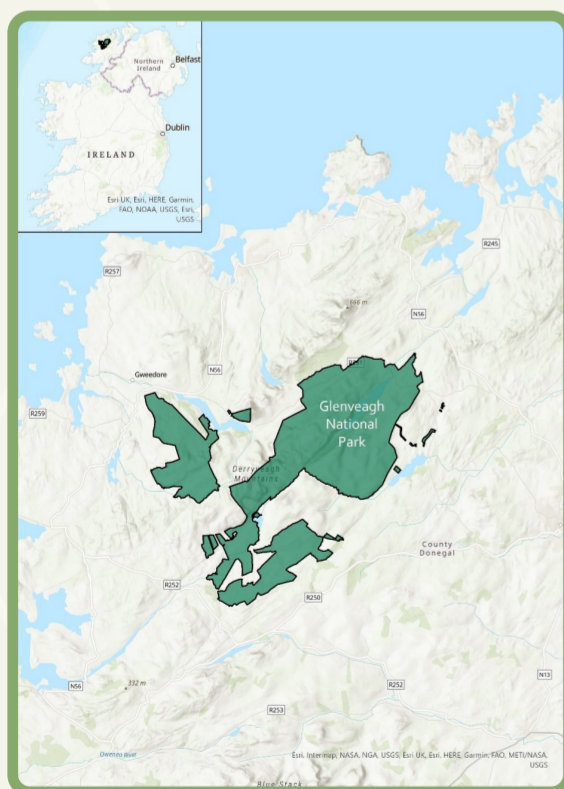
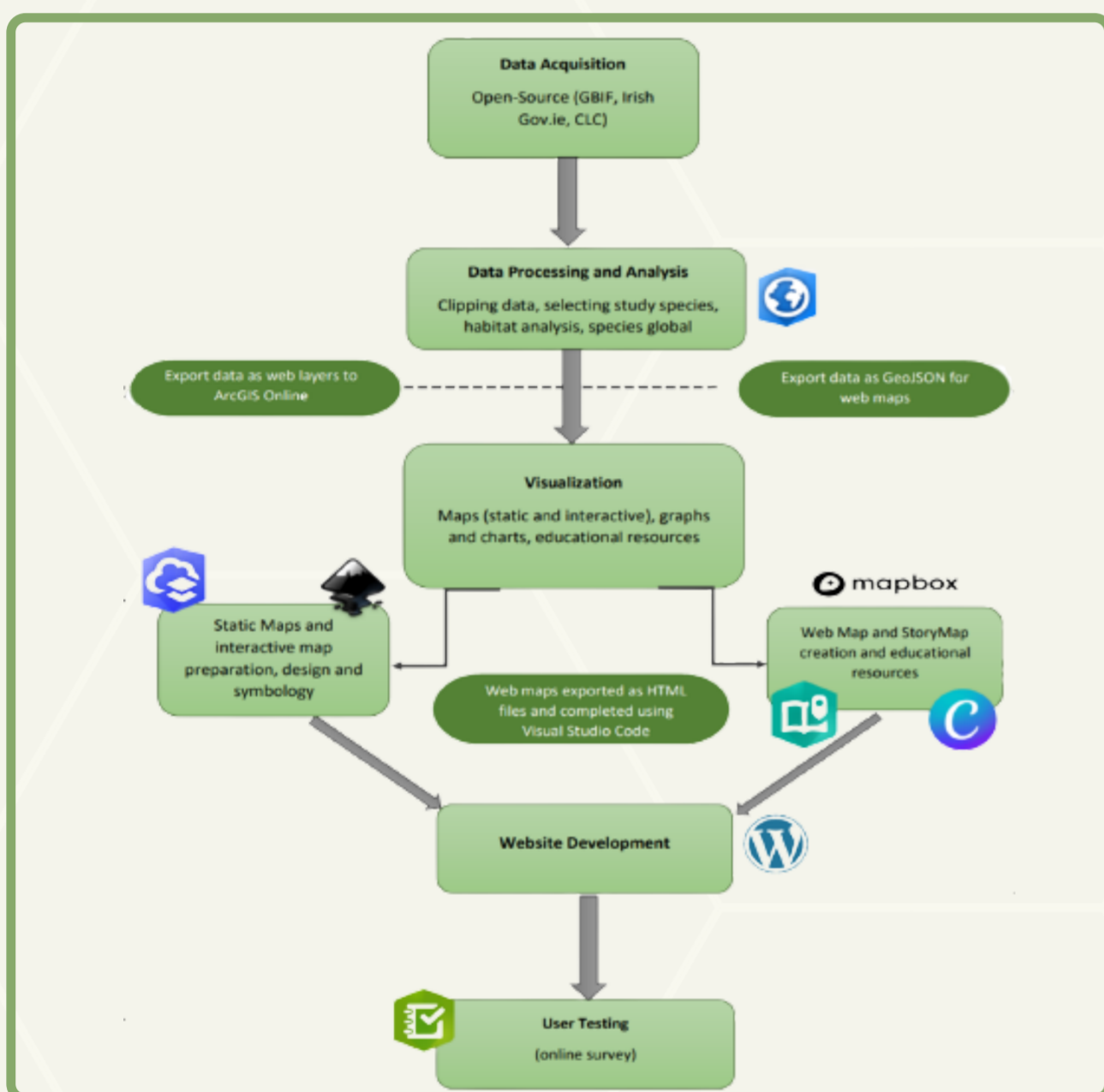


Homepage - Glenveagh biodiversity portal



Interactive species map - Flora and Fauna webpage

Methodology

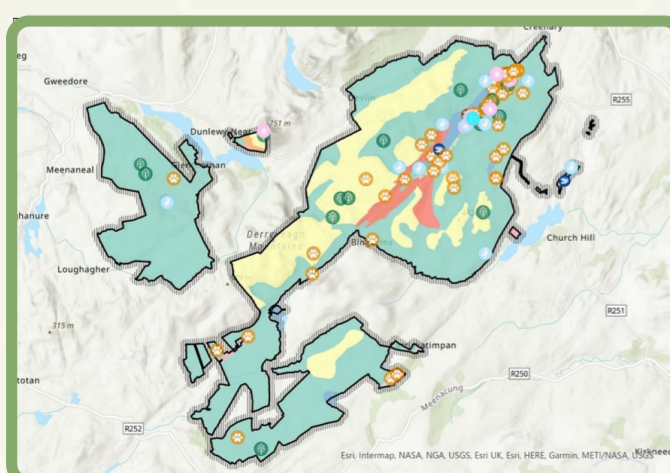


Glenveagh National Park, Ireland

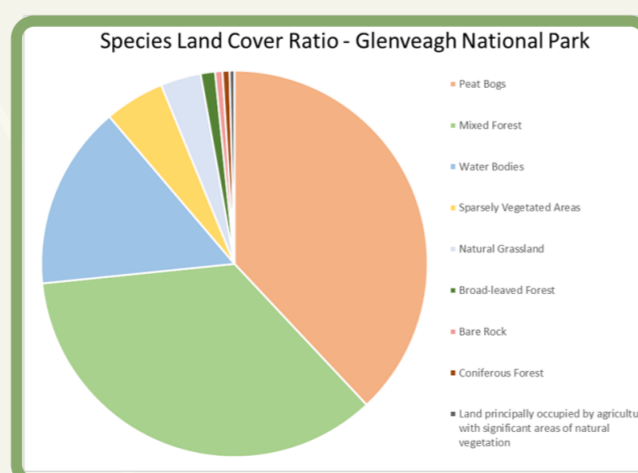
The chosen study area for this research was Glenveagh National Park, Ireland. It was selected for its unique ecosystem on the west coast of Ireland, home to a variety of rare plants and animals.

A brief habitat and species analysis was conducted to gain a better understanding of the area and the relationships between wildlife and the surrounding landscape. A series of maps were created using ArcGIS Pro and Mapbox including global species distribution, National Park features and interactive species map.

Geovisualization techniques were utilised to create an educational website featuring interactive maps and various downloadable educational resources.

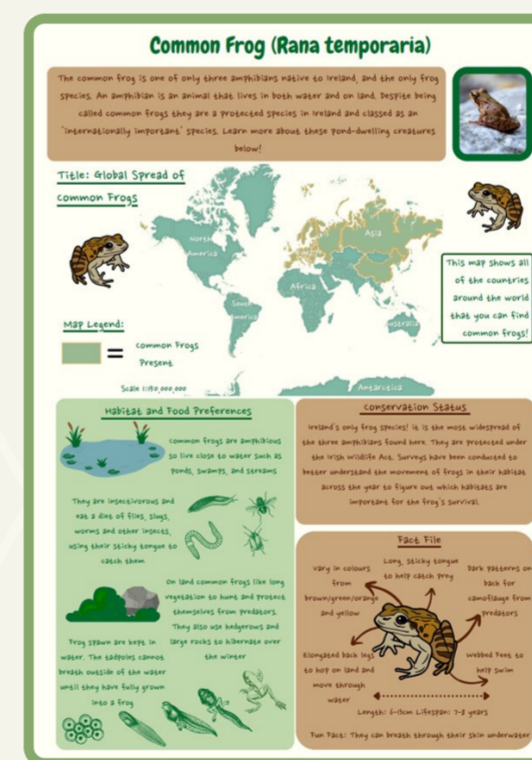


Landcover map with overlying species observations

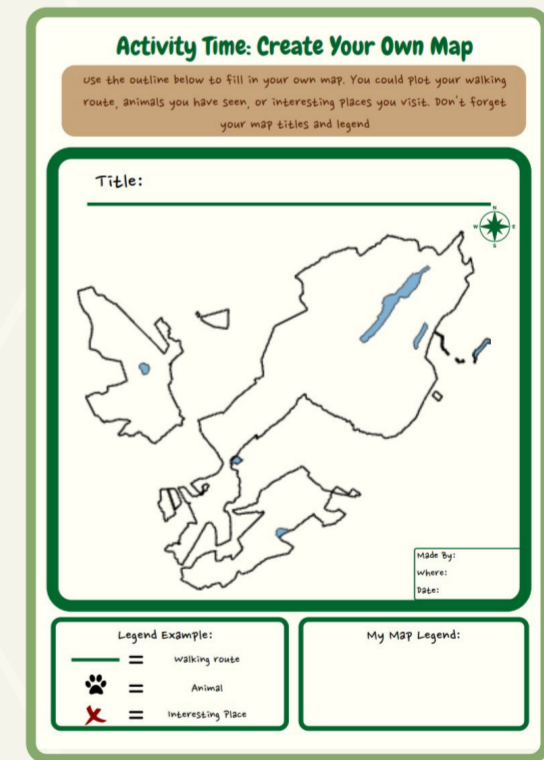


Pie chart showing land composition of total species observations

The children's activities were designed and created to a high visual standard, using Ireland's national school curriculum to determine the level of skill of the intended age group and what they should be learning about. The species profiles were engaging and informative, using a uniform layout and colour scheme using natural colours to create an association with the environment. Each of the profiles contained a static map of the species global distribution and utilised knowledge gained from the analysis stage to document habitat preferences and where each species could be located.



Species profile - common frog



Children's activity - create your own map



Conclusion

The results of this project demonstrated how geovisualization methods can be used to communicate complex spatial and biological data to the general public and school aged children. Mapbox and WordPress had the functionality to create an interactive and easily navigable website with interactive web maps.

The study is a demonstration of how geovisualization can greatly improve the quality of environmental education resources. The produced activities and resources will be utilised by the education centre in Glenveagh National Park and further provided by the park to teachers and school groups who request them.

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