Bird richness in protected and non-protected areas
using Web Services in ArcGIS 10

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Introduction

In the Netherlands, there are several national parks where nature is conserved and protected. Natura 2000 is an European network of areas that need protection. It does not only conserve habitats but also biodiversity.

What does this mean for our bird population? Are there more species in these protected areas than in non-protected areas?

With breeding pairs data collected by SOVON Vogelonderzoek combined with data of the national parks and Natura 2000 regions we attempt to come upon an answer.

Aim

The goal of this project is to investigate if the bird diversity (richness) is higher in national parks and in the Natura 2000 regions than in other areas.

Methods – finding a WMS

Searching for a WMS, we found:
Name of the WMS: Nationale parken WMS on geodata.nationaalgeoregister.nl
http://geodata.nationaalgeoregister.nl/nationaleparken/wms?SERVICE=WMS&request=GetCapabilities&
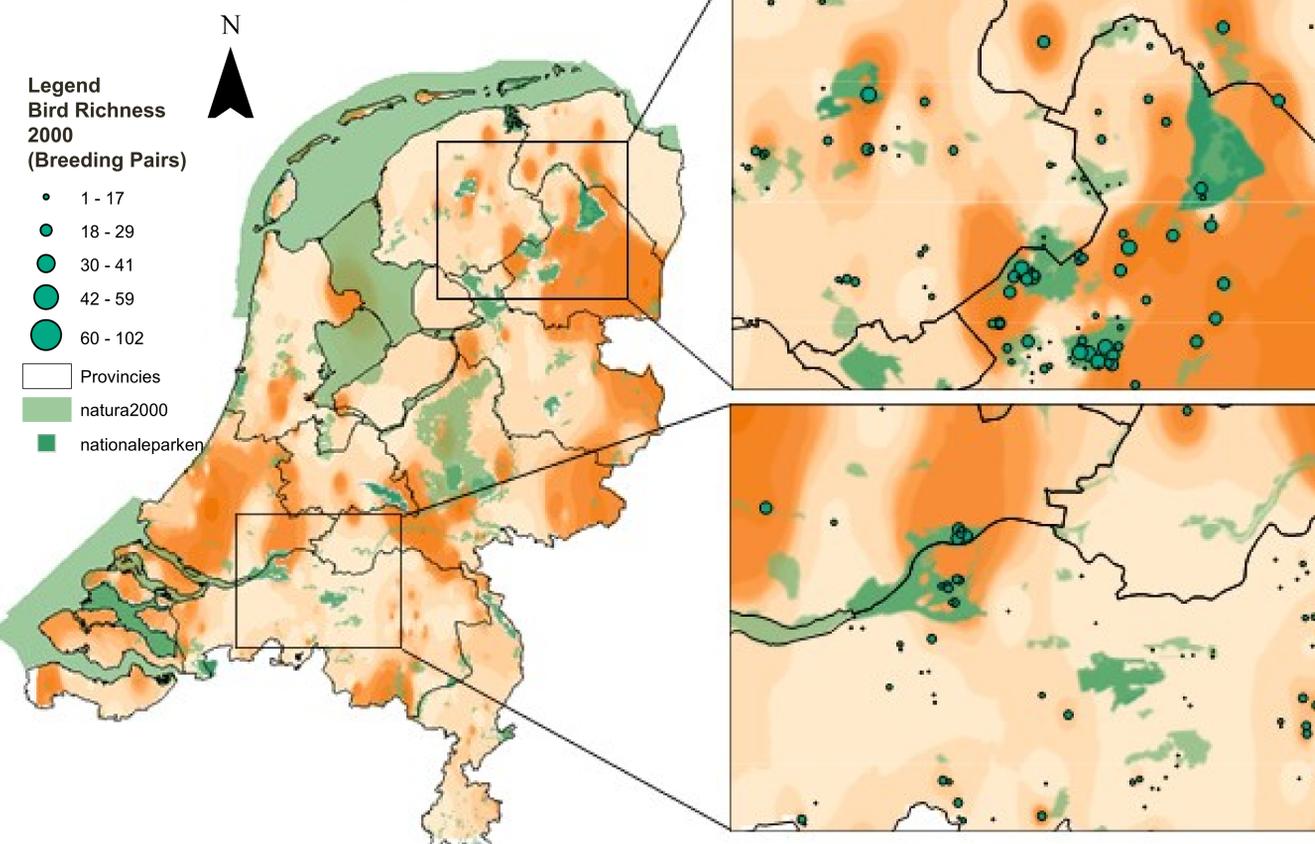Metadata: National parks in the Netherlands

WMS in ArcMap

This WMS found on the national georegister contains the areas of the national parks in the Netherlands.

Methods – finding a WFS

Searching for a WFS, we found:
Name of the WFS: Natura2000 WFS WFS.fdl
Metadata: Polygon shapefile of the natura2000 areas in the Netherlands.

Results – combined maps

Legend
Bird Richness 2000 (Breeding Pairs)
- 1 - 17
- 18 - 29
- 30 - 41
- 42 - 59
- 60 - 102

Provincies
natura2000
nationaleparken

Methods, continued

- We derived data of breeding birds from SOVON Vogelonderzoek. This data contained an Microsoft Acces file with three tables; observations, plots and species. We put the Plot ID, Plot Number, Area, x, y and Year in a new query and also added the count of Name_EN, which gave us the bird richness. Then we converted the query into a table which could be projected in ArcMap.

- To show the national parks of the Netherlands we had to import a WMS from the national georegsiter in ArcCatalog.

- For the Natura 2000 regions we imported a WFS from the national georegister.

- To clarify the data of bird richness we made an interpolation layer (IDW).

Other WMS, Dataset or WFS in ArcMap

WFS: Nationale parken
http://geodata.nationaalgeoregister.nl/nationaleparken/wms?SERVICE=WMS&request=GetCapabilities&
Metadata: National parks in the Netherlands
WFS: Provincies
http://services.arcgis.com/nSZVuSZjHpEZZbRo/arcgis/rest/services/Provincies/FeatureServer
Point feature class RichAbun2000. Derived from Sovon bird counts and edited in Microsoft Acces.
WFS: CBS Wijk- en buurtkaart 2011
http://services.arcgisonline.nl/arcgis/services

Relation between the WMS and other web service or Dataset

The relation between the national parks (WMS) and the natura 2000 regions (WFS) is that they both contain the information where nature is protected in the Netherlands.

The bird data is used to see if the species richness of birds is higher in the protected areas than outside these areas.

Conclusion

Our research question is wether the bird richness is higher in protected areas than in other areas. We could not find a pattern to either confirm or decline this, however, **the bird richness is higher in most protected areas.**

We have to take in account that conservation does not mean 'gaining the highest biodiversity' but protecting vulnerable areas. So protected areas could have a lower bird richness, but some of these bird species might be vulnerable.

In a next research, abundance should also be taken in consideration. Also, the type of species should be determined to clarify wether the species is vulnerable.

Literature

More information on our poster subject can be found on the web:

http://www.nationaalgeoregister.nl/geonetwork/srv/dut/search?#|9c80458b-12c6-4d38-8f6d-387ab6e4ed21

https://www.sovon.nl/

http://www.natura2000.nl/

http://www.nationaalpark.nl/documents/home.xml?lang=nl