Training Session 3

Regional Training Workshop on the SEEA Experimental Ecosystem Accounting for Countries of Latin America and the Caribbean

21-23 November 2018, Rio de Janeiro, Brazil

What was the purpose of our exercise?

- Demonstrate (relative) ease of pulling out a start to basic extent and carbon accounts and visualising GIS data
- Intro to key GIS techniques for these and more complex accounts
- Gain familiarity with GIS (for some)
- Intention not realized: explore use of international datasets to fill holes in national –level information where necessary & supplement information.
- Do explore some of the additional data in the training exercise; consider projecting data, clipping to Rio Grande, and exploring attribute tables/ visualizing the information.

(Project and clip are also very routine operations for SEEA-EEA calculations)

Importance of consistent /appropriate coordinate systems

- Most common coordinate system for global datasets is WGS-84 (World Geodetic System standard- current version).
- Many large scale calculations best in geographic projection systems
- But SEEA accounting needs to be done in appropriate projection system for your country; use national guidance and single system.
- Albers equal area projection is standard projection system in Brazil
- (for smaller countries UTM / Universal Transverse Mercator systems more common).

rio_grande - ArcMap

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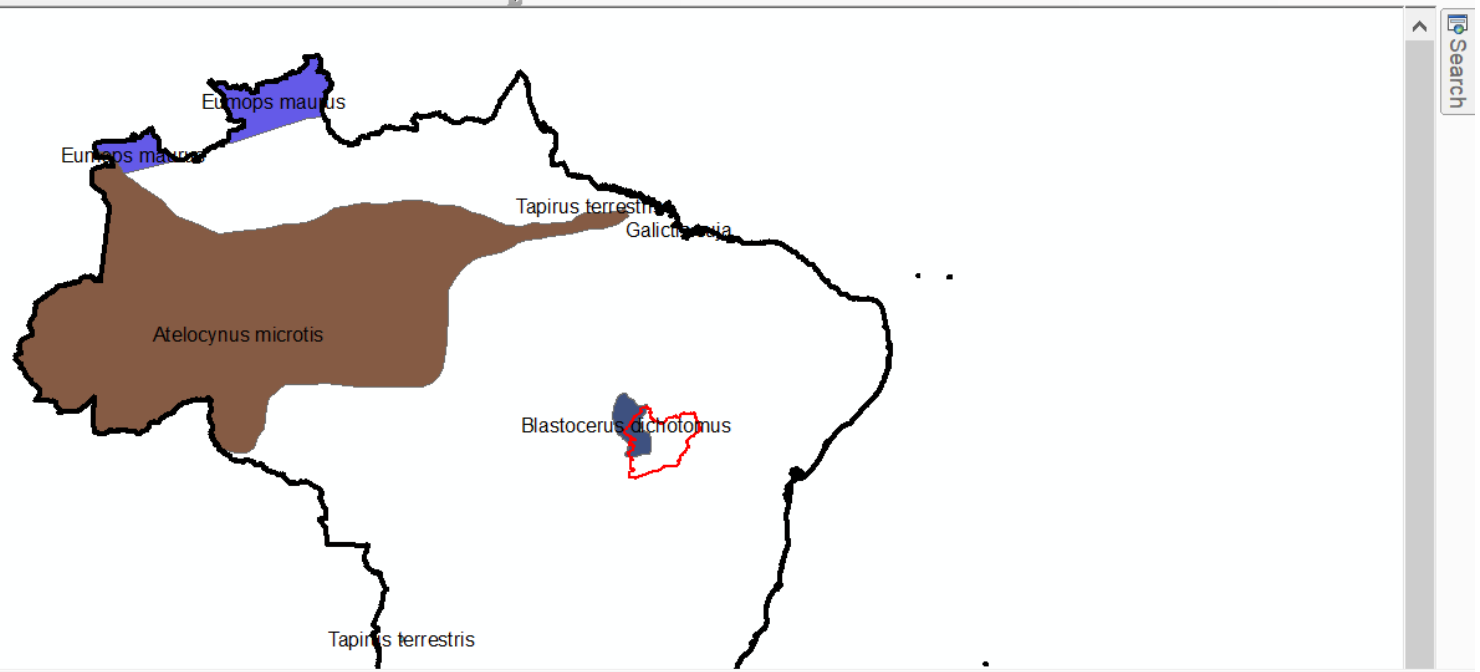
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help

Editor

Table Of Contents

- Layers
  - C:\LUCI\SEEA\Training Materials\Brazil_Exa
    - Rio_Grande_Basin
    - IUCNselection
    - BRAZIL_IUCNMammals
  - C:\LUCI\SEEA\Training Materials\Brazil_Exa
    - BRA_adm0
  - C:\LUCI\SEEA\Training Materials\Brazil_Exa
    - LCLU2016_calcs
    - LCLU2010
    - LCLU2016_calcs
      - English



Search

Table

IUCNselection

FID	Shape *	OBJECTID	id_no	binomial	presence	origin	seasonal	compiler	year	citation	source	dist_comm	island	subspeci
0	Polygon	10	13972	Mus musculus	1	3	1	IUCN	2014	IUCN (International Union for Conservation of Nature)				
1	Polygon	20	21474	Tapirus terrestris	1	1	1	IUCN	2014	IUCN (International Union for Conservation of Nature)				
2	Polygon	29	41639	Galictis cuja	1	1	1	IUCN	2015	IUCN (International Union for Conservation of Nature)				
3	Polygon	43	21474	Tapirus terrestris	1	1	1	IUCN	2014	IUCN (International Union for Conservation of Nature)				
4	Polygon	49	8246	Eumops maurus	1	1	1	IUCN	2016	IUCN (International Union for Conservation of Nature)				
5	Polygon	129	2828	Blastocerus dichotomus	1	1	1	IUCN	2016	IUCN (International Union for Conservation of Nature)				
6	Polygon	147	6924	Atelocynus microtis	1	1	1	IUCN	2011	IUCN (International Union for Conservation of Nature)				

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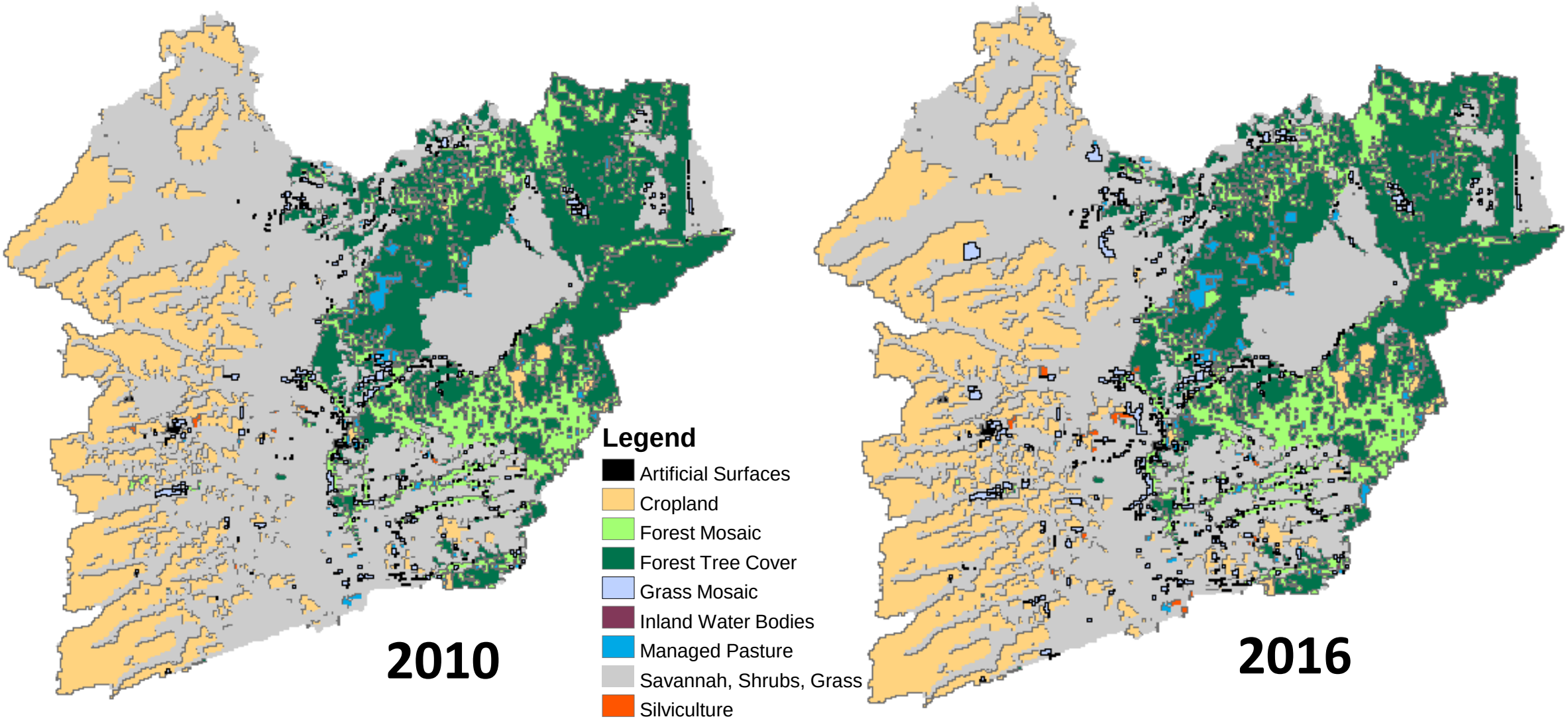
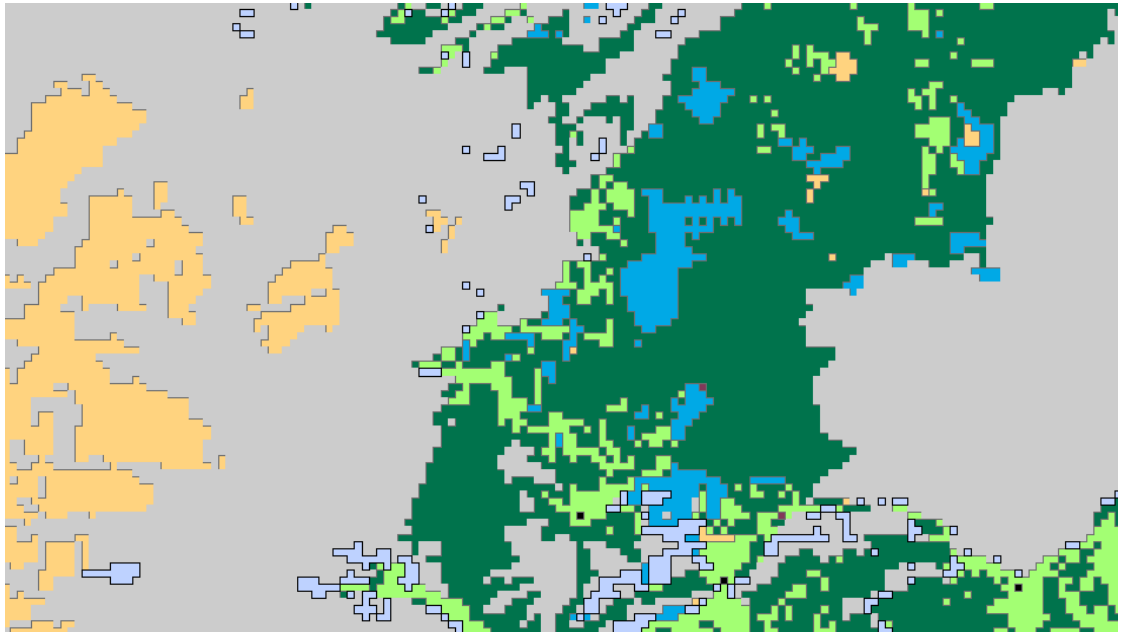
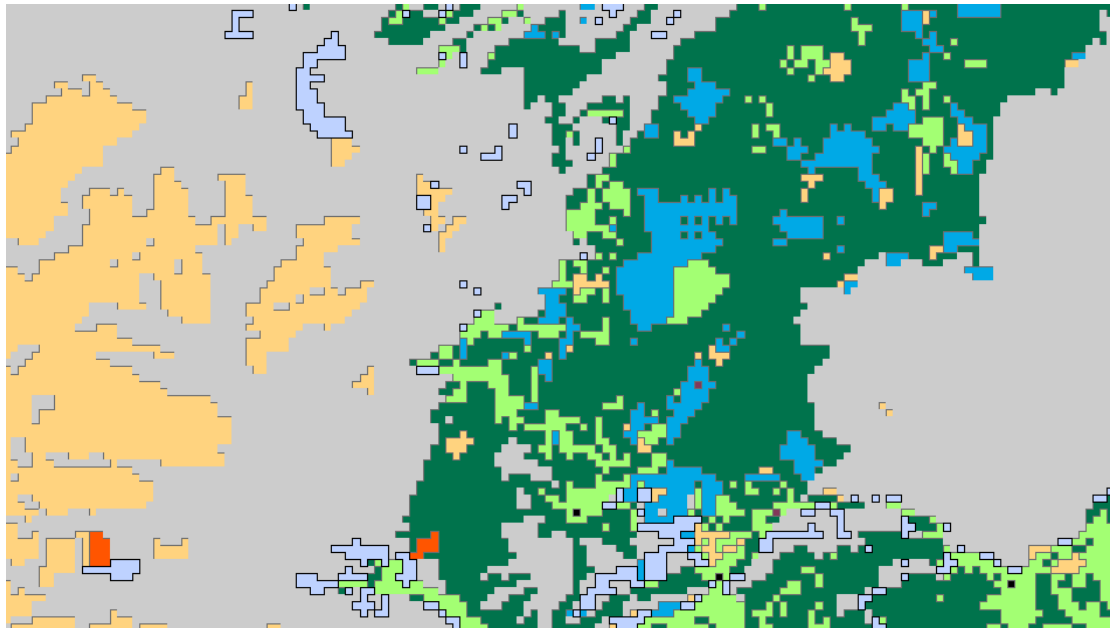
Land use land cover change



Close-up: 2010 -> 2016

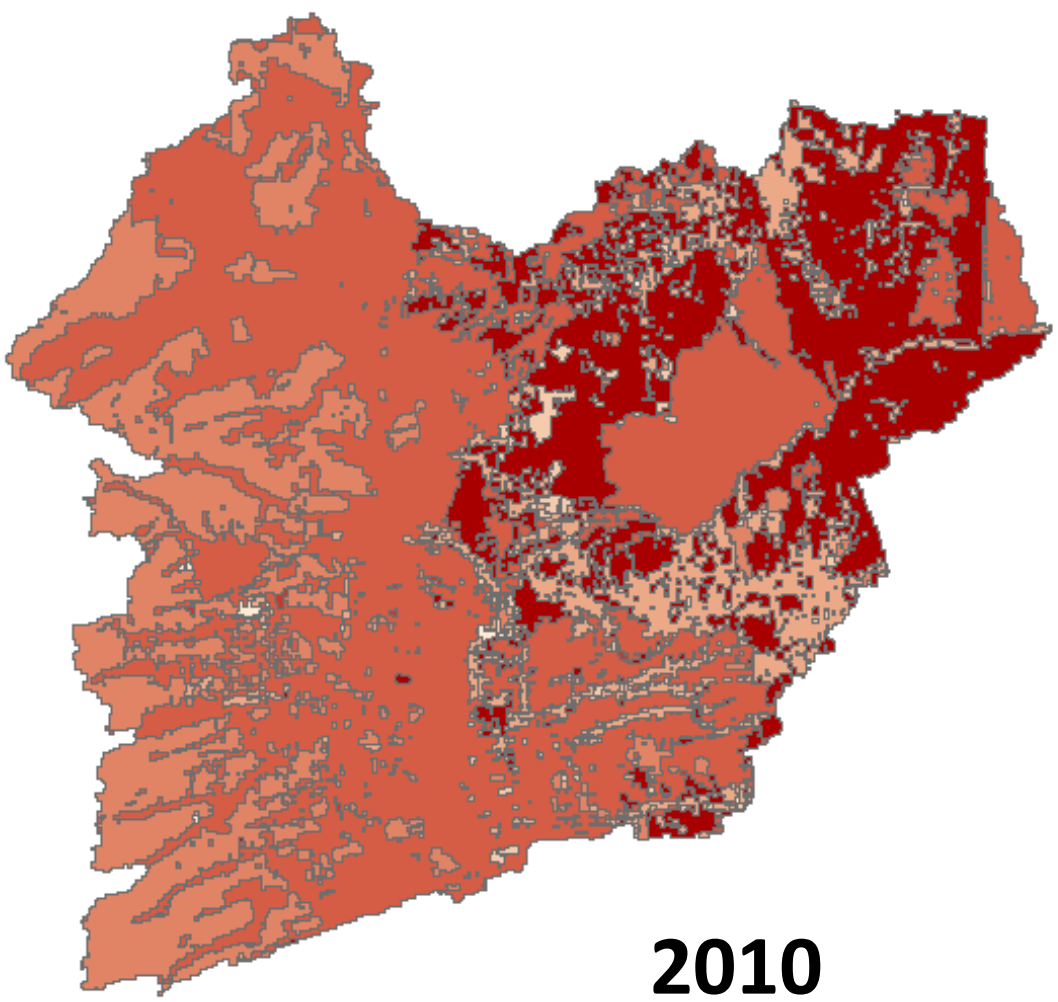




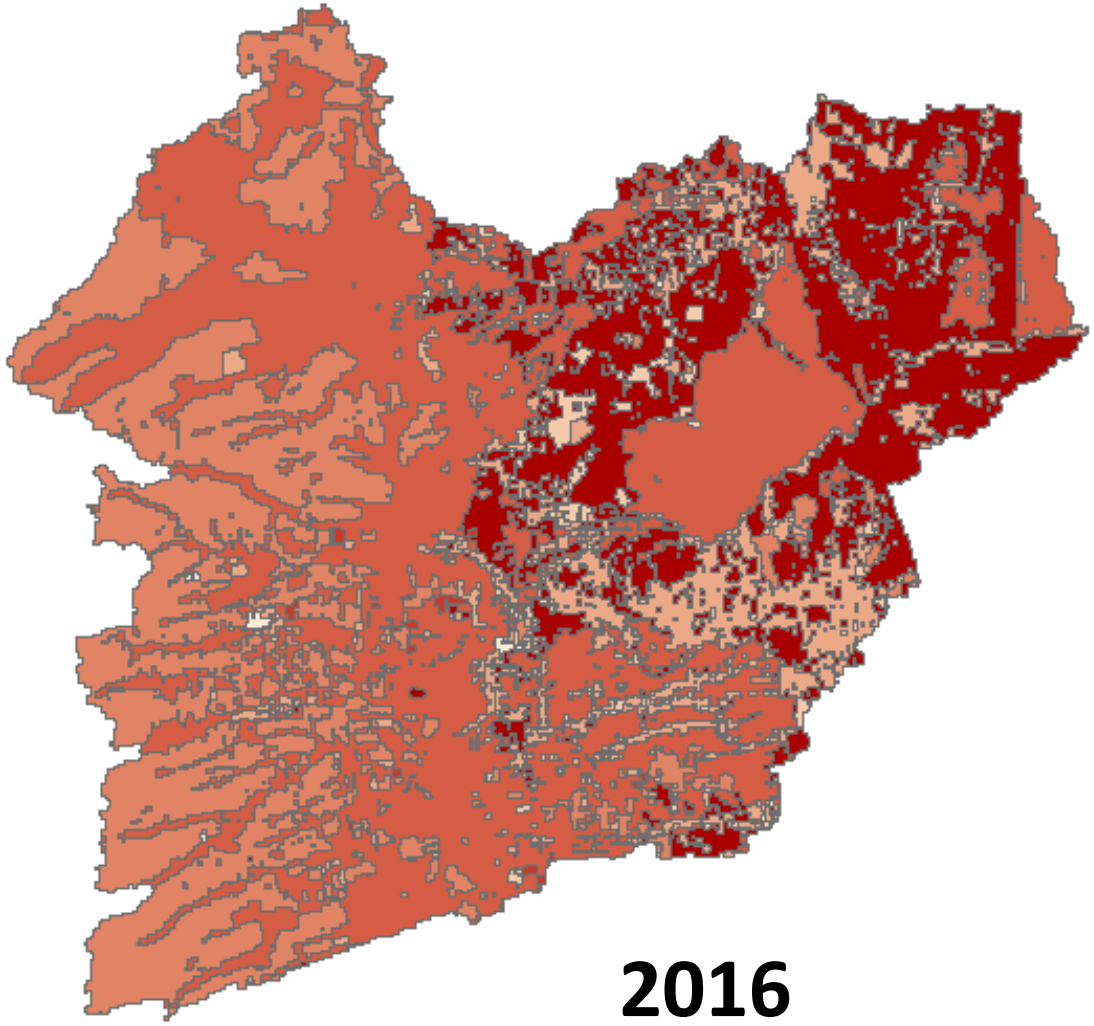
Legend

- Artificial Surfaces
- Cropland
- Forest Mosaic
- Forest Tree Cover
- Grass Mosaic
- Inland Water Bodies
- Managed Pasture
- Savannah, Shrubland, Grassland
- Silviculture

Carbon change (remember carbon numbers made up/ not based on actual data!)



2010



2016

Legend

Carbon

0
250
350
400
450
500
800

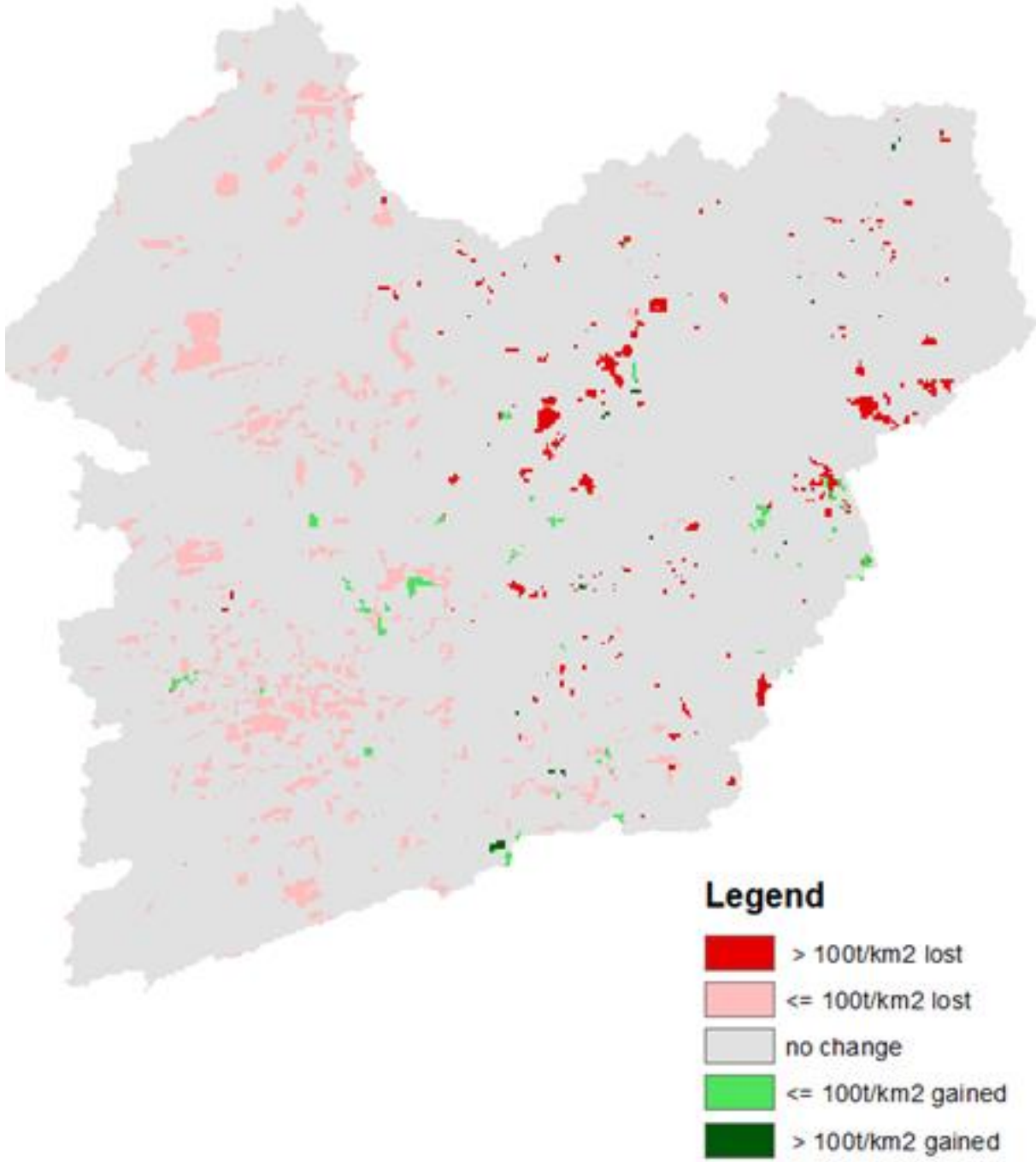
2010-2016 extent/land account

	Opening area (sq km)	Closing area (sq km)	Absolute change (sq km)	% change
Artificial Surfaces	112	126	14	11.1%
Cropland	15512	18786	3274	21.0%
Managed Pasture	884	1160	276	31.2%
Forest Mosaic	6585	6752	167	2.5%
Silviculture	88	205	117	133.0%
Forest Tree Cover	16317	15675	-642	-3.9%
Savannah, Shrub, Grass	36399	32656	-3743	-10.3%
Grass Mosaic	1105	1642	537	48.6%
Inland Water Bodies	25	25	0	0
TOTAL	**77027**	**77027**	**0**	**0**

2010-2016 soil/biomass carbon account

	Opening stock (Mt)	Closing stock (Mt)	Absolute change	% change
Artificial Surfaces	0	0	0	0
Cropland	6.20	7.51	1.31	21.1%
Managed Pasture	0.22	0.24	0.02	9.1%
Forest Mosaic	2.30	2.37	0.07	3.0%
Silviculture	0.04	0.10	0.06	150%
Forest Tree Cover	13.05	12.54	-0.51	-3.9%
Savannah, Shrub, Grass	16.40	14.70	-1.70	-10.4%
Grass Mosaic	0.39	0.57	0.18	46.2%
Inland Water Bodies	0	0	0	0
TOTAL	**38.60**	**38.03**	**-0.57**	**-1.5%**

Hotspots for carbon loss and gain and math error checking:

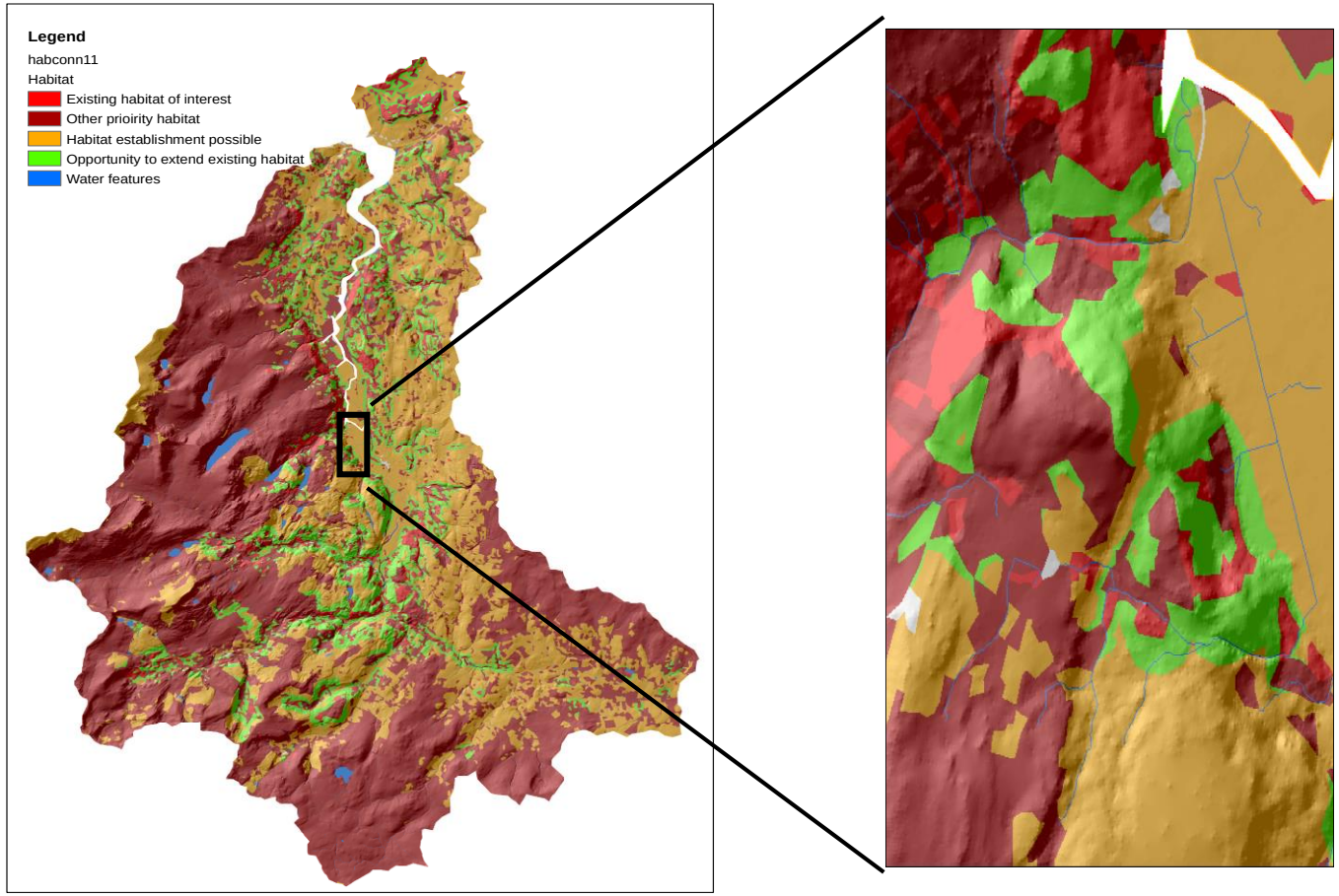


Habitat Connectivity (cost distance through habitat approach)

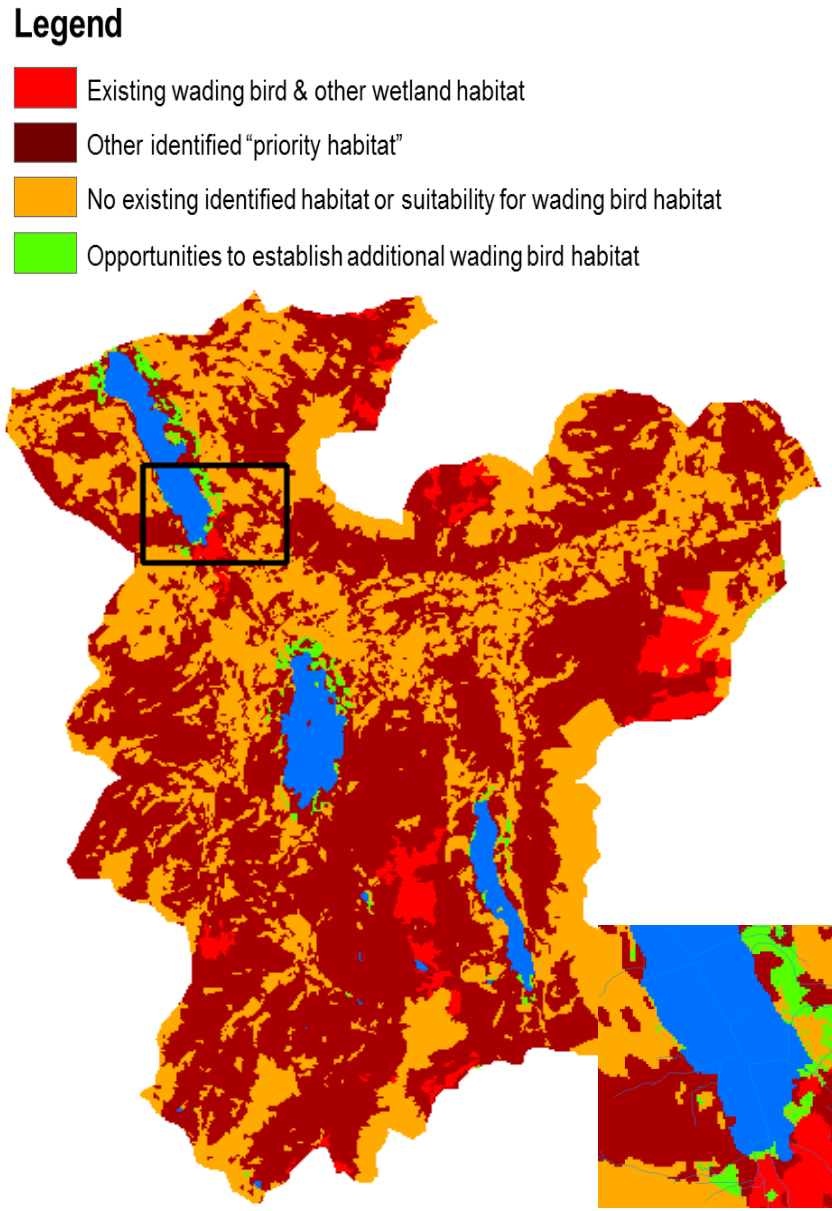
Broadleaved woodland

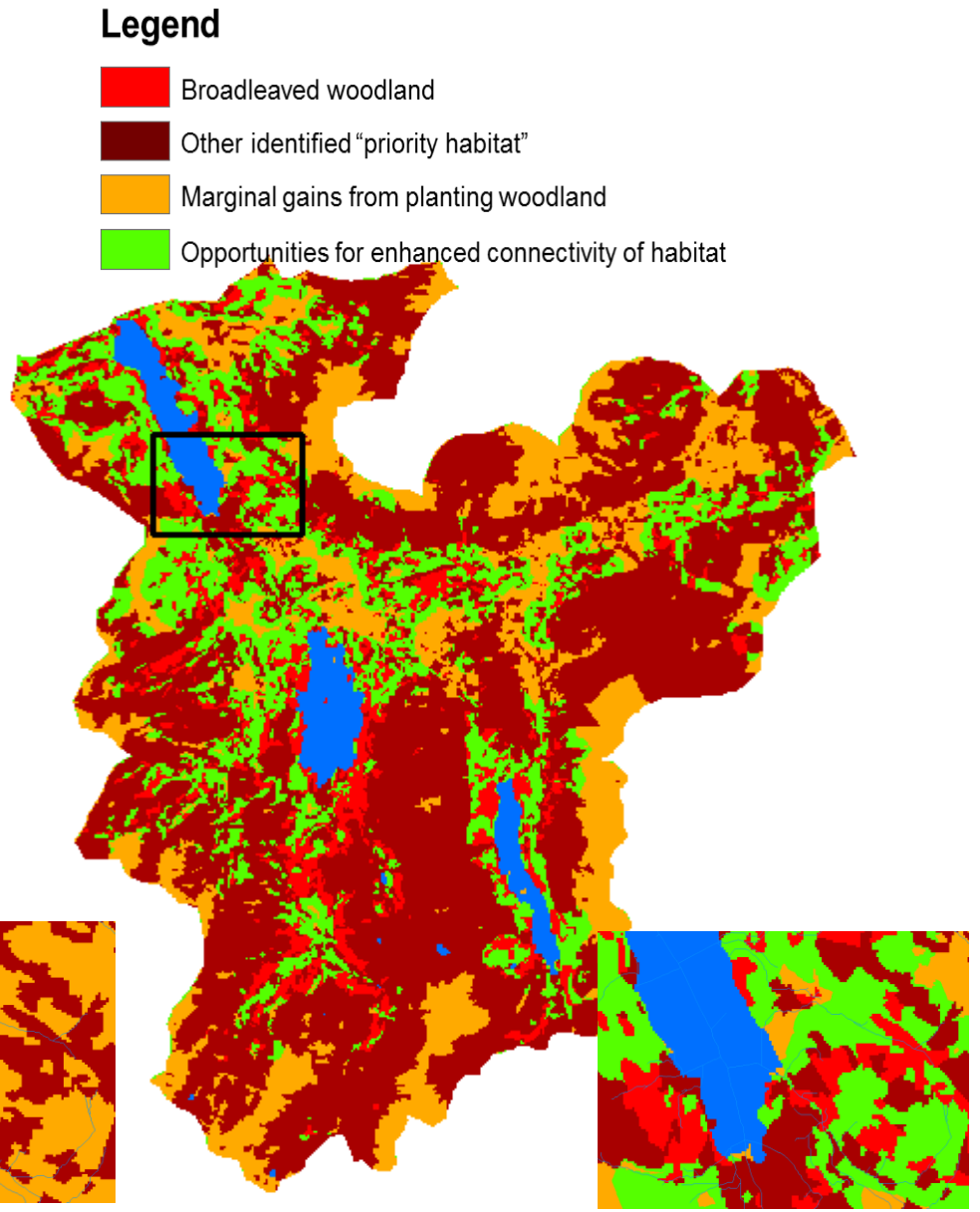
Minimum focal area: 2 ha

Maximum cost distance through hostile terrain: 2.5 km

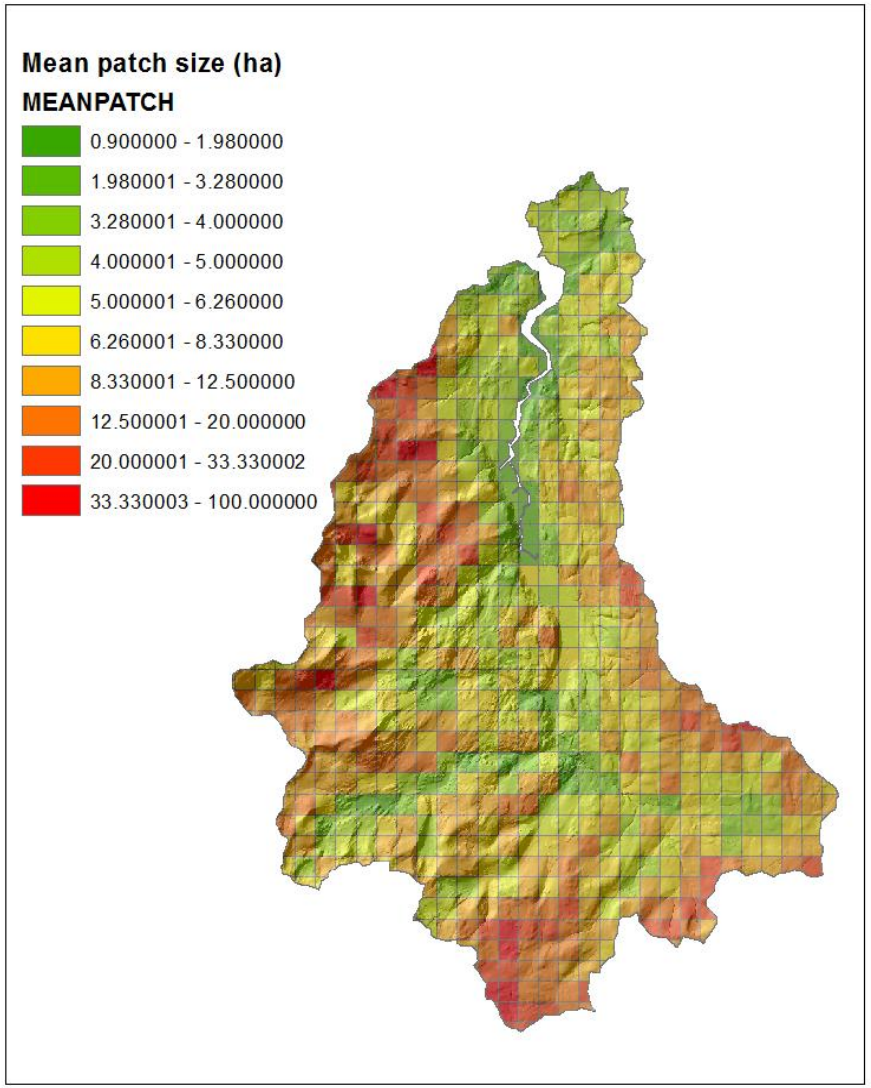


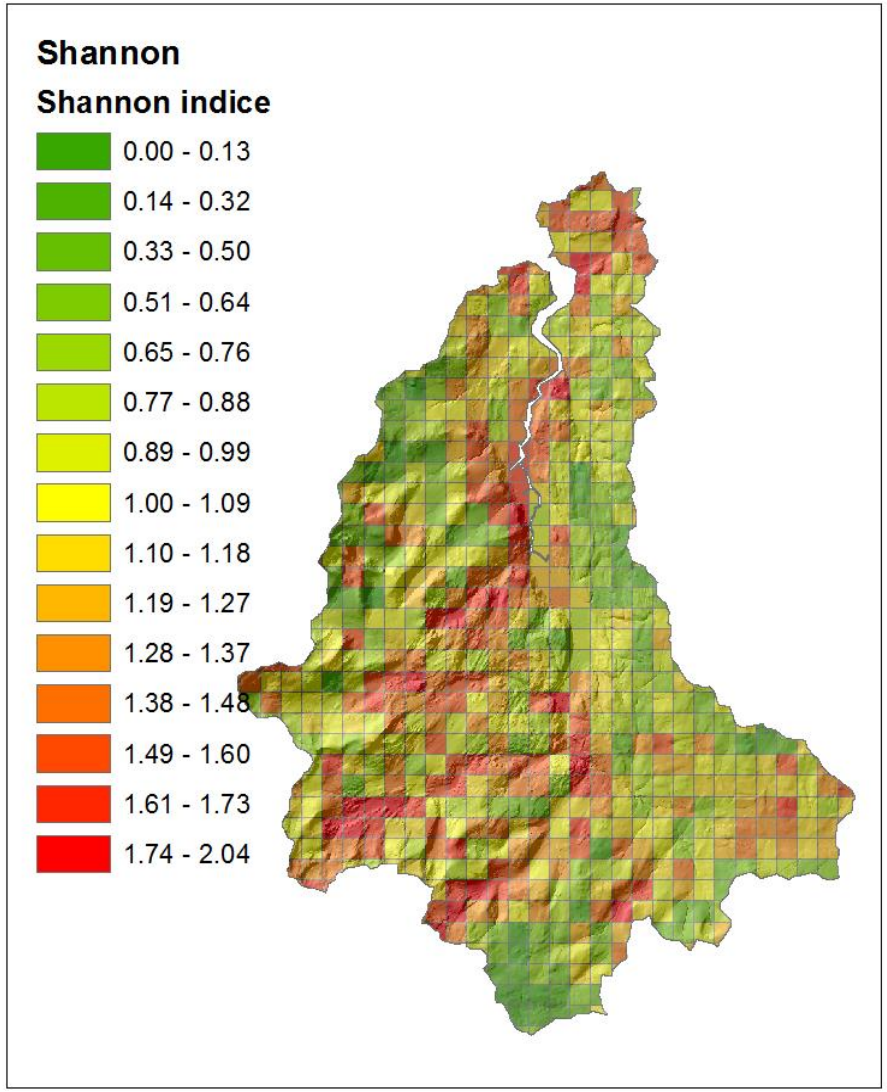
Habitat suitability





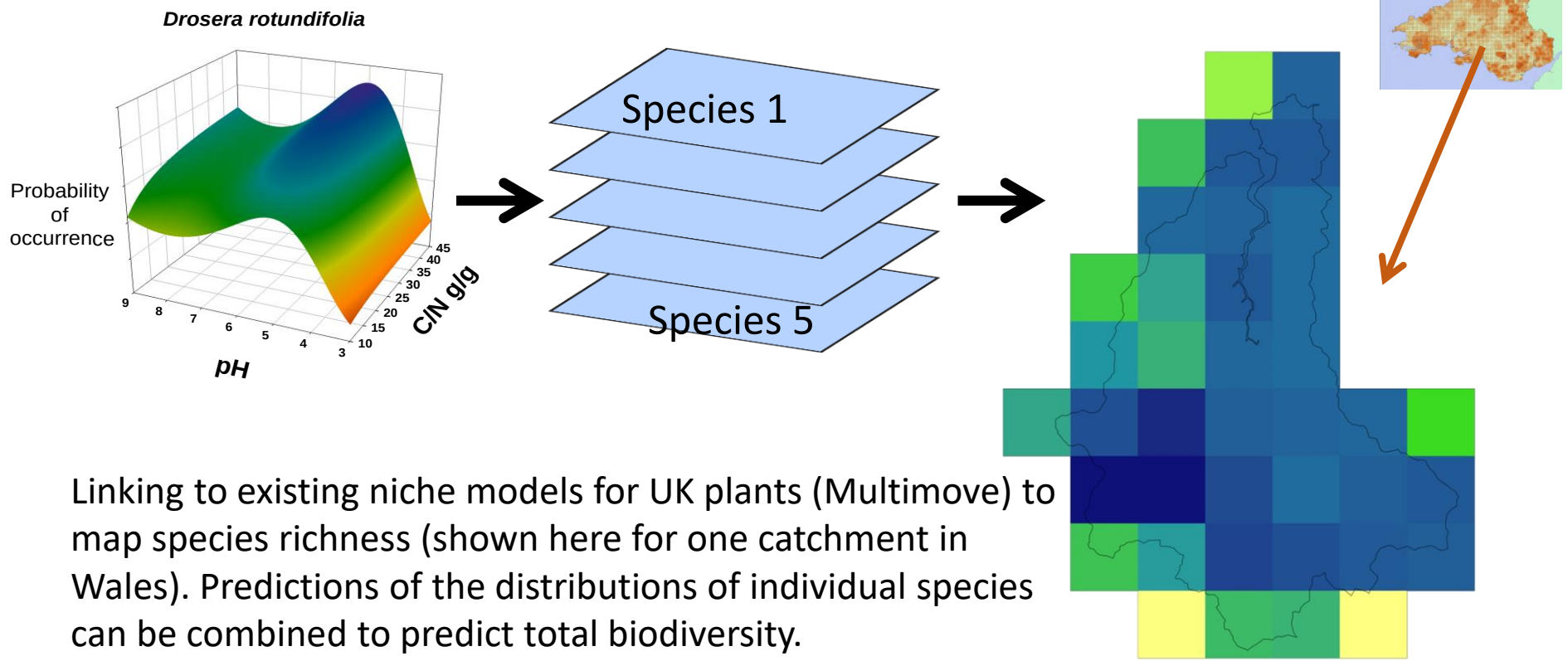
Richness, mean patch size, diversity/evenness indices





Biodiversity: species distribution

Stacked species distribution models



Linking to existing niche models for UK plants (Multimove) to map species richness (shown here for one catchment in Wales). Predictions of the distributions of individual species can be combined to predict total biodiversity.

Steps we took….

- Load in land use land cover data (in this case polygon vector data)
  (probably wisest to do dissolve step here for general calculations in future)
- Create look up table linking LULC codes to further information
- Join look up table to polygon data, associating table linking code with code associated with appropriate year.
- *We did dissolve step after this stage*
- Calculate area for each individual LULC class
- By comparing changes in area for each class between years, we had the data needed for the extent account (can also take analysis further to see what changed to what…)
- To look at carbon stock (and changes), multiply carbon number (tonnes per sq km) with area of each LULC class (in sq km) to get total tonnes.