Copernicus Land Monitoring Service

Monitoring stability of protected areas & related pressures: Natura2000 sites
Information on Natura 2000:

- Natura 2000 is Europe’s ecological network of protected areas and the key instrument to biodiversity protection in the EU
- The protected N2000 sites are planned to have a spatial and functional connectivity to allow species and biodiversity hot spots to interact, exchange and thus stay healthy.
- Further Information and maps can be found here:
  
  http://land.copernicus.eu/local/natura/view
  
Monitoring the stability of Natura 2000 sites

- **Contribute** to assessment of the effectiveness of the Natura 2000 network in terms of halting the decline of certain habitat types
- **Support and facilitate** downstream work on biodiversity monitoring
- **Focus** on a selection of semi-natural/species rich grassland habitats
- **Map & monitor** land cover / land use (changes) including a 2 km buffer zone of selected Natura 2000 sites
- Analyse **pressures** in the buffer zone
- **Assess** grasslands habitat changes
Natura2000 Product Specifications

- Land cover / land use nomenclature based on the MAES ecosystem types (Mapping and Assessment of Ecosystems and their Services)
- Hierarchical structure (4 levels):
  - Level 1: 10 classes; Level 4: 55 classes (previously 62)
- Largely compatible with CORINE, Urban Atlas and Riparian Zones nomenclature
- Vector data (polygons)
- Minimum Mapping Unit 0.5 ha (land cover/use status 2012/2006 and Changes)
- Minimum Mapping Width 10m
- Overall Accuracy 2006+2012: 85%, Change Areas: 80%
Input Data used for the assessment

- **Satellite Imagery:**
  ESA Data Warehouse: VHR CORE_03 SPOT-5/6 (2.5m) and Pléiades scenes

- **Auxiliary data:**
  - Riparian Zones & Urban Atlas 2012 LC/LU
  - other: CORINE Land Cover, HR Layers, OSM, ...

- **Methodology:**
  Visual image interpretation and delineation of land cover/use from VHR satellite imagery

- **Output:** Vector data set of land cover/use 2006+2012 & changes
Monitoring stability of Natura 2000 sites

Focus on Grassland; e.g. habitats of a N2K site in Southern Germany

6210: Semi-natural dry grasslands on calcareous substrates

6510: Lowland hay meadows

SPOT-5, 2.5 m, Date: 2011-08-25

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Current coverage & upcoming Natura2000 product extension (2006/12)

- **Existing N2000 product**
- **Natura2000 product extension:**
  - Phase 1 (finished, 2017)
  - Phase 2 (finished, 2018)
  - Phase 3 (ongoing, 2018-2019)
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N2000 sites with semi-natural LC/LU (Cyprus) - ongoing
Monitoring stability of Natura 2000 sites

Akamas Site + buffer, Cyprus

Produced by Geoville under current Natura200 production
Monitoring stability of Natura 2000 sites

Cyprus, Akamas, Neo Chorio

Zoom-in: Land cover/land use 2012
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Cyprus, Akamas, Neo Chorio

Zoom-in: LC/LU changes 2006 to 2012
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Change from forest (2006) to grassland (2012)

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2006
Active Gravel-pit showing several changes over time

2012
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The growing gravel extraction area consumes arable land.
Urbanisation: Change from grassland/cropland to urban

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SPOT-5 2006

SPOT-5 2012
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Representation of Change areas in vector file format (Lemesos Site)
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http://land.copernicus.eu/local/natura/
Pressure Analysis

- Performed in **2km buffer** zone surrounding the selected N2000 sites
- Identification of general **processes** and landscape-level trends being active and **impacting on the N2000 site**
- Use of an adapted **land cover change - pressure association matrix**
- Considered **relevant Pressures**:  
  - Urbanization  
  - Agricultural intensification  
  - Afforestation  
  - Deforestation  
  - Land Abandonment  
  - Drainage
- **Reverse processes** (e.g. arable/grassland conversion) also need to be considered, in order to properly account for the overall balance.
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Pressure: e.g. Agricultural Intensification

Pressure maps: showing percentages of individual pressures, per site
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Results of first Copernicus Natura 2000 assessment 2006-2012

Most prominent causes of pressures on grassland:

- Shrub Enroachment
- Grassland Abandonment
- Overgazing
- Urban Sprawl
- Conversion to Non-Land
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Preliminary results of first Copernicus N2000 assessment 2006-12

- Main Pressure: Agricultural Intensification
- Other found Pressures (in decreasing order of magnitude): Urbanisation; Land Abandonment; Shrub Encroachment/Afforestation
- Generally small grassland decline; significant protective effect of N2000 sites as compared to surrounding area
Preliminary Results on Cyprus Sites*

No changes registered inside the N2K sites

Total Mapped Area: 44,094.38 Ha

Total Changed Area (in the 2 Km buffer): 341.19 Ha (<1%)

<table>
<thead>
<tr>
<th>CHANGE</th>
<th>HA</th>
<th>%</th>
<th>PRESSURE</th>
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</thead>
<tbody>
<tr>
<td>Grassland / Sclerophylus - Urban Area</td>
<td>165,1182</td>
<td>47.89%</td>
<td>Urbanisation</td>
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<tr>
<td>Construction Site - Urban Area</td>
<td>31,73163</td>
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<td>Cropland - Urban</td>
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<td>Different Croplands</td>
<td>15,49256</td>
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<td></td>
<td></td>
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<td>Intensification</td>
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<tr>
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<td>Urban Area - Grassland / Sclerophylus</td>
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<td>Cropland - Grassland / Sclerophylus</td>
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<td>Increase</td>
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<td>Land with no use - Grassland</td>
<td>22,75011</td>
<td>6.60%</td>
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*Product under Quality Control
Thanks for your attention