# LOCAL COMPONENT VERIFICATION REPORT
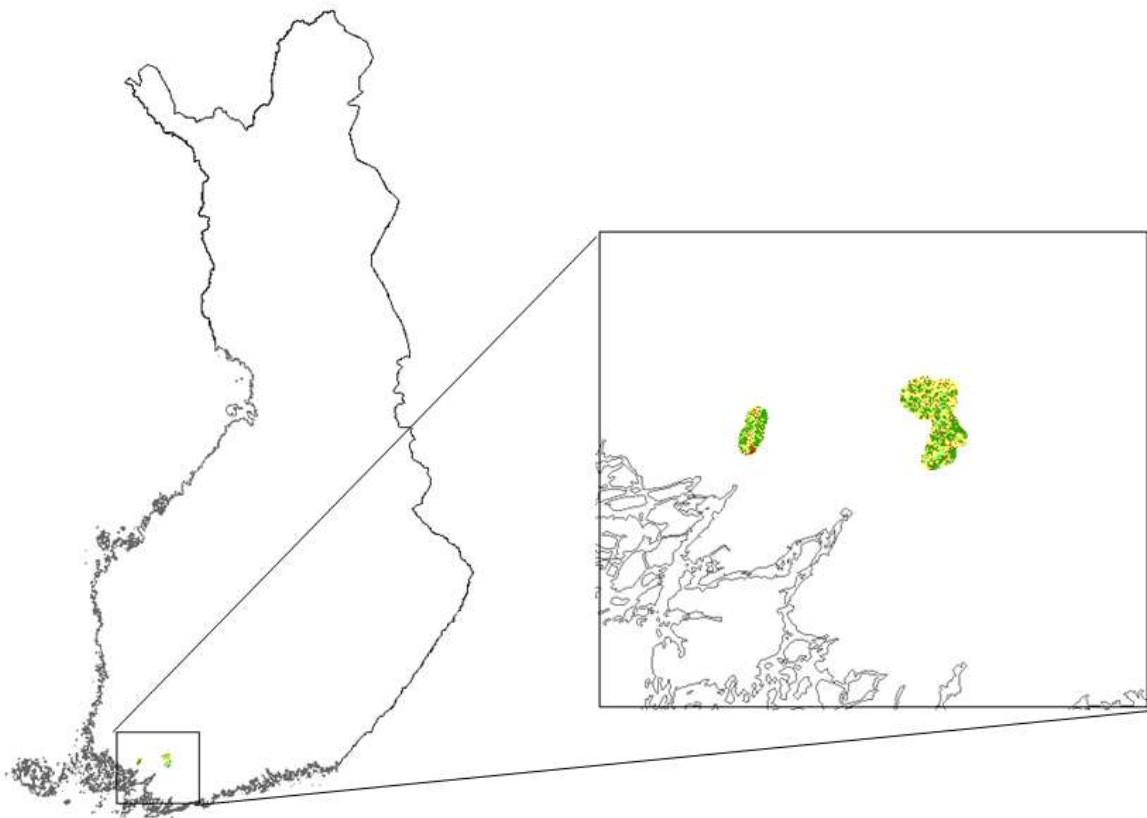
### I. Metadata

| DATASET | *Natura 2000 land cover (2012)* |
|---|---|
| **Country** | *Finland* |
| **Institution carrying out the work** | *Finnish Environment Institute SYKE* |
| **Data preparation** | *Iida Autio, iida.autio@ymparisto.fi* |
| **Visual inspection of samples** | *Minna Kallio, minna.kallio @ymparisto.fi* |
| **Evaluation** | *Minna Kallio, minna.kallio@ymparisto.fi* |
| **Reference data provided centrally** | IMAGE2012 VHR satellite image mosaic |
| | GoogleEarth Imagery, Bing imagery |
| **In situ data used** | **National Orthophoto database/The National Land Survey**<br>Natural color/black and white ortophotos<br>Resolution: 0.25-0.5m<br>Reference years: 2010-2015 (partial coverages) |
| | **The National Road and Street Database, Digiroad**<br>Vector dataset<br>Reference year: 2017 (compared to data from 2011-2013) |
| | **National high resolution Corine Land Cover 2012**<br>National Corine raster dataset<br>Resolution 20x20m<br>Reference year: 2012 |
| | **Corine Land Cover change layers (National) 2000-2006 and 2006-2012**<br>Resolution 0.5ha |
| | **The Finnish Land Parcel Information System (FLPIS)**<br>Based on farming subsidy reports<br>Information of the dominant plant species of the field plots<br>Vector data<br>Reference year: 2011 |
| | **Soil Extraction Permits Database**<br>Vector data<br>Reference year: constantly updated but data contains information on duration of the permits |
| | **Topographic Database/The National Land Survey**<br>Compilations of object groups<br>Vector data<br>Reference year:1960*- 2012 (*no exact metadata of the production year) |
| | **Topographic map series/The National Land Survey**<br>Raster data<br>Reference year: 2017 |
| | **Topographic map series/The National Land Survey**<br>Raster data<br>Reference years: 2011-2013 (partial coverages) |
| | **Copernicus high resolution imperviousness layer** (HRL Imperviousness)<br>Reference year: 2012 |
| | **Digital Elevation Model/ The National Land Survey & SYKE**<br>Resolution 10x10m<br>Raster data<br>Reference year: 2015 |
| | **Laser Scanned Tree Cover Density**<br>Resolution 2x2m<br>Raster Data |

| | |
|---|---|
| | Reference year: 2018 |
| | **Tree Species Data from satellite images**<br>Raster Data<br>Reference year: 2015 |
| | **Shoreline 10 and River network**<br>Based on the Topographic database/National Land Survey of Finland<br>Vector data<br>Reference year: 2016 |
| | **Laser scanned elevation**<br>Resolution 2x2m<br>Raster Data<br>National Land Survey of Finland<br>Reference years 2008-2016 |
| | **Laser scanned vegetation height**<br>Resolution 2x2m<br>Raster Data<br>National Land Survey of Finland & SYKE<br>Reference years 2008-2016 |
| **Software used for verification** | LACO-WIKI, (+ GoogleMaps, ArcMap 10.5 ) |
| **Internal quality control done by** | *Minna Kallio, minna.kallio@ymparisto.fi* |
| **Date and place of writing the report** | *01.03.2018.  Helsinki* |

## II. Overall characterization of the dataset

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| Area covered within country | 0.06 % | 20 837 hectares |
| Number of valid classes appearing in the country | 20 | |
| Number of samples selected | 154 | Remark: 10 samples / class was aimed to be selected, but some classes included less than 10 polygons |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 125 | |
| Overall Accuracy | 94,6% | |
| Overall Accuracy (CI) | ±1,90% | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 90.9% | Correct: 140; Too coarse: 12; Too detailed: 2 |
| Correctness of delineated area | 61,03 % | Correct: 94; Unnecessary parts included: 44; Missing parts: 21; Both missing parts and unnecessary parts included: 35 |
| Positional accuracy | 96.75% | Correct: 149; Shifted: 5 |
| OVERVIEW FIGURE OF NATURA 2000 STATUS LAYER - FINLAND | | |

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|

**GENERAL REMARKS ON THE QUALITY OF THE DATASET**

The data consists of N2K grassland-rich sites, including a 2km buffer. The test area covers very small part of agricultural areas and just two Natura 2000 sites in Finland. Only 20 out of 60 classes of the N2K nomenclature (Level 4) is present in this data. The delineation detail is sufficient and shifts in the data are rare. Sometimes it seems that Finnish national datasets are used to produce the classes like Topographic database peatlands or fields.

Most polygons belong to class Non-irrigated arable land (2111). Their accuracy is usually high.

The polygons are delineated with class road network (1211), but there are some problems with the roads used to cut the big agricultural areas into separate polygons. Only some roads are included in the road network, and when they are used to produce the class 2111 polygons, it sometimes leads to erroneous delineation of these polygons. The road polygon ends when the width of the road is less than 10 m. It causes odd or coincidental patterns to the polygons formed by these road polygons. The problem of outlining field polygons with roads does not show in the result of the verification, because the delineation follows the rules defined in the Nomenclature Guidelines document (Copernicus Initial Operations 2011-2013 - Land Monitoring Service Local Component: Natura 2000 Mapping. European Environment Agency. D1.8 NOMENCLATURE GUIDELINE Issue 1.1 Date Issued: 13/08/2015).

The most interesting classes in N2K data are the Semi-natural grasslands (4211-4212). Class definitions need reconsideration in terms of TCD: Trees groups are often scattered in otherwise open grassland areas and it makes the delineation of the polygons according to tree cover density difficult with this particular MMU.

The frequency and area of Other natural & semi-natural coniferous forest (3231) is high. The problematic classes among forests are the swamp forests, which seem to be derived from the objects in national data in N2K data. The palustrine soils mapped in the Topographic database are not accurate and is quite old.

The most interesting classes in N2K data are the Semi-natural grasslands (4211-4212). Class definitions need reconsideration in terms of TCD: Trees groups are often scattered in otherwise open grassland areas and it makes the delineation of the polygons according to tree cover density difficult with this particular MMU.

More attention should be paid to semi-natural habitat patterns, especially tree patterns in semi-natural grasslands, wooded pastures and set-asides. Areas besides water elements should be reconsidered (not combining land areas with water).

**SUMMARY STATISTICS OF NATURA 2000 STATUS LAYER – FINLAND**

| N2K Class | Number of polygons | Area (ha) | % |
|---|---|---|---|
| 1111 | 605 | 917,74 | 4 % |
| 1113 | 31 | 71,45 | 0 % |
| 1211 | 5 | 55,76 | 0 % |
| 1311 | 5 | 12,54 | 0 % |
| 1411 | 1 | 0,74 | 0 % |
| 2111 | 174 | 10411,9 | 50 % |
| 2121 | 1 | 1,05 | 0 % |
| 3121 | 4 | 9,98 | 0 % |
| 3131 | 87 | 340,73 | 2 % |
| 3221 | 117 | 483,1 | 2 % |
| 3231 | 378 | 5436,82 | 26 % |
| 3321 | 5 | 14,4 | 0 % |
| 3331 | 74 | 549,21 | 3 % |
| 3411 | 345 | 1490 | 7 % |
| 4111 | 109 | 426,97 | 2 % |
| 4211 | 34 | 285,68 | 1 % |
| 4212 | 50 | 216,43 | 1 % |
| 7212 | 4 | 32,71 | 0 % |
| 9111 | 10 | 72,38 | 0 % |
| 9211 | 9 | 8,05 | 0 % |
| SUM | | 20837,64 | 100 % |

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| **LC/LU CLASS** | 1111 | Urban fabric (predominantly public and private units) |
| **Number of samples selected for the class** | 10 | |
| **CORRECTNESS OF LC/LU CODE** | | |
| **Number of correctly interpreted samples** | 7 | |
| **Class user's accuracy** | 70,00 % | |
| **Class user's accuracy (CI)** | ± 0,2994 | |
| **Class producer's accuracy** | 97,82 % | |
| **Class producer's accuracy (CI)** | ± 0,0000 | |
| **CORRECTNESS OF DELINEATION** | | |
| **Detail of delineation** | 70 % | Correct 7 - Too coarse 2 - Too detailed 1 |
| **Correctness of delineated area** | 40 % | Correct 4 - Missing and unnecessary parts 1 - Missing parts 1 - Unnecessary parts included 4 |
| **Positional accuracy** | 100 % | Correct 10 - Shifted 0 |
| **CHARACTERIZATION OF THE CLASS** | | |
| **Typical mistakes (misclassification, wrong delineation, etc.) describe in detail** | | Misclassifications between farming industry and residental areas. The buffer zone around buildings is wide and includes field. |
| **Typical reference information used / minimum required for decision** | | National CLC12 raster |
| **Typical appearance of the class in samples (habitats, cultivation type, land use etc)** | | Residential buildings in rural areas, only some farm buildings. |
| **EXAMPLE (typical mistake):** | | |



Wrong code (sample point and polygon turquoise color, others green): Farming industries dominate the polygon 1111->1113. The grey buildings are industrial and black buildings residential.

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 1113 | Industrial, commercial and military units |
| Number of samples selected for the class | 10 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 8 | |
| Class user's accuracy | 80,00 % | |
| Class user's accuracy (CI) | ± 0,2613 | |
| Class producer's accuracy | 23,75 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 80 % | Correct 8 - Too coarse 2 - Too detailed 0 |
| Correctness of delineated area | 60 % | Correct 6 - Missing and unnecessary parts 1 - Missing parts 2 - Unnecessary parts included 1 |
| Positional accuracy | 80 % | Correct 8 - Shifted 2 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Misclassifications between farming industry and residental areas. The buffer zone around buildings is wide and includes a lot of field. |
| Typical reference information used / minimum required for decision | | National CLC12 raster |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Buildings belonging to the farming industry. |
| EXAMPLE ( typical appearance): | | |



There is a wide buffer around the 1113 area, that includes a lot of field and forest.

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 1211 | Road networks and associated land |
| Number of samples selected for the class | 5 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 5 | |
| Class user's accuracy | 100,00 % | |
| Class user's accuracy (CI) | ± 0,0000 | |
| Class producer's accuracy | 100,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct  5 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 40 % | Correct  2 - Missing and unnecessary parts 1 - Missing parts 2 - Unnecessary parts included 0 |
| Positional accuracy | 100 % | Correct  5 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | |
| Typical reference information used / minimum required for decision | | Digiroad, airphoto |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | There is no explanation how roads are cut to individual polygons. |
| EXAMPLE (typical appearance): | | |



Only some roads (here green) are in the dataset.

**III. Characterization of the dataset by LC/LU class -**

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 1311 | Mineral extraction, dump and construction sites |
| Number of samples selected for the class | 5 | |
| **CORRECTNESS OF LC/LU CODE** | | |
| Number of correctly interpreted samples | 4 | |
| Class user's accuracy | 80,00 % | |
| Class user's accuracy (CI) | ± 0,3920 | |
| Class producer's accuracy | 100,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| **CORRECTNESS OF DELINEATION** | | |
| Detail of delineation | 100 % | Correct 5 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 40 % | Correct 2 - Missing and unnecessary parts 0 - Missing parts 2 - Unnecessary parts included 1 |
| Positional accuracy | 100 % | Correct 5 - Shifted 0 |
| **CHARACTERIZATION OF THE CLASS** | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | |
| Typical reference information used / minimum required for decision | | National CLC12 raster |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Sand extraction sites. |
| EXAMPLE (typical mistakes / typical appearance): | | |



Parts missing in the north (selected sample in turquoise, other samples in green).

**III. Characterization of the dataset by LC/LU class -**      **1.4.1.1 Green urban areas and leisure facilities**

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 1411 | Green urban areas and leisure facilities |
| Number of samples selected for the class | 1 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 1 | |
| Class user's accuracy | 100,00 % | |
| Class user's accuracy (CI) | ± 0,0000 | |
| Class producer's accuracy | 22,82 % | |
| Class producer's accuracy (CI) | ± ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct  1 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 100 % | Correct  1 - Missing and unnecessary parts 0 - Missing parts 0 - Unnecessary parts included 0 |
| Positional accuracy | 100 % | Correct  1 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Only one sample. |
| Typical reference information used / minimum required for decision | | Airphoto |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Leisure facilitiy boundaries are seldom easy to interpret in rural landscapes. |

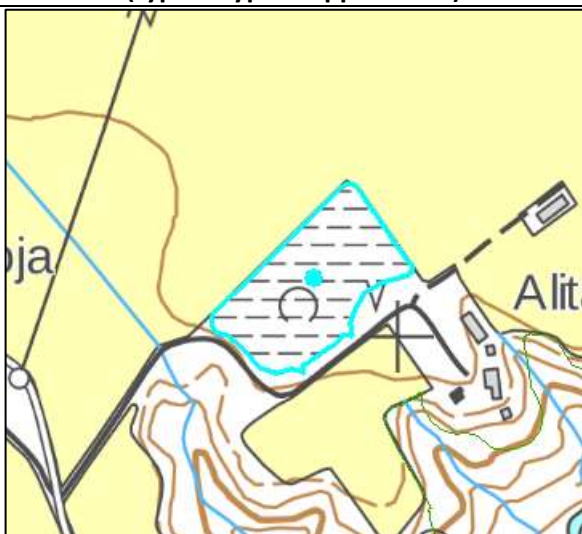| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 2111 | Non-irrigated arable land |
| Number of samples selected for the class | 10 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 10 | |
| Class user's accuracy | 100,00 % | |
| Class user's accuracy (CI) | ± 0,0000 | |
| Class producer's accuracy | 99,92 % | |
| Class producer's accuracy (CI) | ± 0,0000 | 0 |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct 10 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 90 % | Correct 9 - Missing and unnecessary parts 0 - Missing parts 1 - Unnecessary parts included 0 |
| Positional accuracy | 100 % | Correct 10 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | Well classified and found. | |
| Typical reference information used / minimum required for decision | LPIS and Topographic database | |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | N2K Grassland data is in arable regions with a lot of fields. | |
| EXAMPLE (typical mistakes / typical appearance): | | |



The field polygons are often large and complicated. Road network has high impact on polygon delineation (National road network=red, selected sample polygon=turquoise, fields of topographic database= yellow, other N2K polygons=green) .

**III. Characterization of the dataset by LC/LU class -**  2.1.2.1 Greenhouses

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 2121 | Greenhouses |
| Number of samples selected for the class | 1 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 1 | |
| Class user's accuracy | 100,00 % | |
| Class user's accuracy (CI) | ± 0,0000 | |
| Class producer's accuracy | 100,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct 1 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 100 % | Correct 1 - Missing and unnecessary parts 0 - Missing parts 0 - Unnecessary parts included 0 |
| Positional accuracy | 100 % | Correct 0 - Shifted 1 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | Only one sample | |
| Typical reference information used / minimum required for decision | airphoto | |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | |
| EXAMPLE (typical mistakes / typical appearance): | | |

**III. Characterization of the dataset by LC/LU class -          3.1.2.1 Broadleaved swamp forest**

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| **LC/LU CLASS** | 3121 | Broadleaved swamp forest |
| **Number of samples selected for the class** | 4 | |
| **CORRECTNESS OF LC/LU CODE** | | |
| **Number of correctly interpreted samples** | 4 | |
| **Class user's accuracy** | 100,00 % | |
| **Class user's accuracy (CI)** | ± 0,0000 | |
| **Class producer's accuracy** | 100,00 % | |
| **Class producer's accuracy (CI)** | ± 0,0000 | |
| **CORRECTNESS OF DELINEATION** | | |
| **Detail of delineation** | 75 % | Correct 3 - Too coarse 0 - Too detailed 1 |
| **Correctness of delineated area** | 75 % | Correct 3 - Missing and unnecessary parts 0 - Missing parts 1 - Unnecessary parts included 0 |
| **Positional accuracy** | 100 % | Correct 10 - Shifted 0 |
| **CHARACTERIZATION OF THE CLASS** | | |
| **Typical mistakes (misclassification, wrong delineation, etc.) describe in detail** | | |
| **Typical reference information used / minimum required for decision** | | Corine land cover raster 20x20 m, airphotos, topographic database |
| **Typical appearance of the class in samples (habitats, cultivation type, land use etc)** | | Only 4 samples. |
| **EXAMPLE (typical typical appearance):** | | |



Selected sample = turquoise, Topographic database palustrine layer = black dash line

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 3131 | Other natural & semi natural broadleaved forest |
| Number of samples selected for the class | 10 | |
| **CORRECTNESS OF LC/LU CODE** | | |
| Number of correctly interpreted samples | 3 | |
| Class user's accuracy | 30,00 % | |
| Class user's accuracy (CI) | ± 0,2994 | |
| Class producer's accuracy | 100,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| **CORRECTNESS OF DELINEATION** | | |
| Detail of delineation | 70 % | Correct 7 - Too coarse 3 - Too detailed 0 |
| Correctness of delineated area | 60 % | Correct 6 - Missing and unnecessary parts 0 - Missing parts 0 - Unnecessary parts included 4 |
| Positional accuracy | 100 % | Correct 10 - Shifted 0 |
| **CHARACTERIZATION OF THE CLASS** | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Forests are typically very mosaicked and broadleaved often close to mixed forests. |
| Typical reference information used / minimum required for decision | | Corine land cover raster 20x20 m, airphotos, topographic database |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Pure broadleaves forests are usually small patches in the forest mosaic. |
| EXAMPLE (typical mistakes): | | |



Selected sample = turquoise

Wrong class.

### III. Characterization of the dataset by LC/LU class -                3.2.2.1 Coniferous swamp forest

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 3221 | Coniferous swamp forest |
| Number of samples selected for the class | 10 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 8 | |
| Class user's accuracy | 80,00 % | |
| Class user's accuracy (CI) | ± 0,2613 | |
| Class producer's accuracy | 100,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 70 % | Correct 10 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 40 % | Correct 7 - Missing and unnecessary parts 0 - Missing parts 0 - Unnecessary parts included 3 |
| Positional accuracy | 100 % | Correct 9 - Shifted 1 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Quite well interpreted class. Also a thin peat layer is considered as swamp forest in N2K data. |
| Typical reference information used / minimum required for decision | | Corine land cover raster 20x20 m, airphotos, topographic database |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | |
| EXAMPLE ( typical appearance): | | |



Selected sample = turquoise

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 3231 | Other natural & semi natural coniferous forest |
| Number of samples selected for the class | 10 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 10 | |
| Class user's accuracy | 100,00 % | |
| Class user's accuracy (CI) | ± 0,0000 | |
| Class producer's accuracy | 95,54 % | |
| Class producer's accuracy (CI) | ± 0,0000 | 0 |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct 10 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 40 % | Correct 4 - Missing and unnecessary parts 0 - Missing parts 1 - Unnecessary parts included 5 |
| Positional accuracy | 100 % | Correct 10 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Unnecessary parts are easily included in large polygons. |
| Typical reference information used / minimum required for decision | | Corine land cover raster 20x20 m, airphotos, topographic database |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | This is a typical class in Finnish forests covering large areas. |
| EXAMPLE (typical mistakes / typical appearance): | | |



Unnecessary parts included. Selected sample = turquoise, other samples = green

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 3321 | Mixed swamp forest |
| Number of samples selected for the class | 5 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 4 | |
| Class user's accuracy | 80,00 % | |
| Class user's accuracy (CI) | ± 0,3920 | |
| Class producer's accuracy | 19,26 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct 10 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 40 % | Correct 2 - Missing and unnecessary parts 0 - Missing parts 1 - Unnecessary parts included 2 |
| Positional accuracy | 100 % | Correct 10 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Delineation often includes unnecessary parts. Also a thin peat layer is classified as swamp forest in N2K data. |
| Typical reference information used / minimum required for decision | | Corine land cover raster 20x20 m, airphotos, topographic database |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | 6 samples. |
| EXAMPLE (typical mistakes / typical appearance): | | |
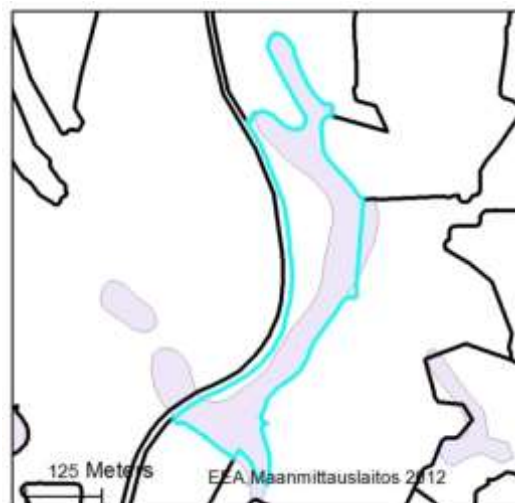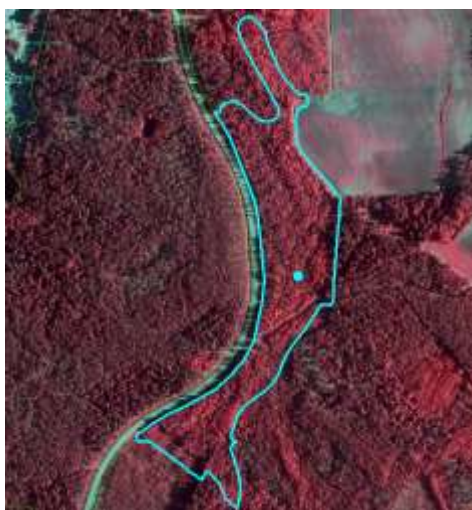


Wrong delineation, unnecessary parts included. Selected sample = turquoise. National Topographic database peatland = lilac, the layer is obviously partly used in producing the class.

| DATASET | N2K | Natura 2000 status layer 2012 |
| --- | --- | --- |
| LC/LU CLASS | 3331 | Other natural & semi natural mixed forest |
| Number of samples selected for the class | 10 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 6 | |
| Class user's accuracy | 60,00 % | |
| Class user's accuracy (CI) | ± 0,3201 | |
| Class producer's accuracy | 59,10 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 80 % | Correct 8 - Too coarse 2 - Too detailed 0 |
| Correctness of delineated area | 50 % | Correct 5 - Missing and unnecessary parts 1 - Missing parts 1 - Unnecessary parts included 3 |
| Positional accuracy | 100 % | Correct 10 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Misclassifications with class 3231. Finnish forest mosaic is not easy to turn into patterns from satellite images. |
| Typical reference information used / minimum required for decision | | Corine land cover raster 20x20 m, airphotos, topographic database |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Very typical Finnish forest. |
| EXAMPLE (typical mistakes / typical appearance): | | |



Wrong code. Selected sample = turquoise.

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| **LC/LU CLASS** | 3411 | Transitional woodland and scrub |
| **Number of samples selected for the class** | 10 | |
| **CORRECTNESS OF LC/LU CODE** | | |
| **Number of correctly interpreted samples** | 10 | |
| **Class user's accuracy** | 100,00 % | |
| **Class user's accuracy (CI)** | ± 0,0000 | |
| **Class producer's accuracy** | 88,57 % | |
| **Class producer's accuracy (CI)** | ± 0,0000 | |
| **CORRECTNESS OF DELINEATION** | | |
| **Detail of delineation** | 100 % | Correct 10 - Too coarse 0 - Too detailed 0 |
| **Correctness of delineated area** | 40 % | Correct 4 - Missing and unnecessary parts 0 - Missing parts 1 - Unnecessary parts included 5 |
| **Positional accuracy** | 100 % | Correct 10 - Shifted 0 |
| **CHARACTERIZATION OF THE CLASS** | | |
| **Typical mistakes (misclassification, wrong delineation, etc.) describe in detail** | | |
| **Typical reference information used / minimum required for decision** | | Corine land cover raster 20x20 m, airphotos, topographic database |
| **Typical appearance of the class in samples (habitats, cultivation type, land use etc)** | | The class contains forest cuttings but also old agricultural areas turning back to forests. An important class measuring pressures to important grassy habitats. |
| **EXAMPLE ( typical appearance):** | | |



Good interpretation. Selected sample = turquoise.

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| **LC/LU CLASS** | 4111 | Managed grassland |
| **Number of samples selected for the class** | 10 | |
| **CORRECTNESS OF LC/LU CODE** | | |
| **Number of correctly interpreted samples** | 5 | |
| **Class user's accuracy** | 50,00 % | |
| **Class user's accuracy (CI)** | ± 0,3267 | |
| **Class producer's accuracy** | 90,80 % | |
| **Class producer's accuracy (CI)** | ± 0,0000 | |
| **CORRECTNESS OF DELINEATION** | | |
| **Detail of delineation** | 80 % | Correct 8 - Too coarse 2 - Too detailed 0 |
| **Correctness of delineated area** | 50 % | Correct 5 - Missing and unnecessary parts 0 - Missing parts 1 - Unnecessary parts included 4 |
| **Positional accuracy** | 100 % | Correct 10 - Shifted 0 |
| **CHARACTERIZATION OF THE CLASS** | | |
| **Typical mistakes (misclassification, wrong delineation, etc.) describe in detail** | | This is a difficult class to interpretate because the degree of management is not properly defined in datasets. Easily confused with 4212 and 4211. |
| **Typical reference information used / minimum required for decision** | | Airphoto, LPIS, Topographic database. |
| **Typical appearance of the class in samples (habitats, cultivation type, land use etc)** | | A typical class in arable regions. |
| **EXAMPLE ( typical appearance):** | | |



Good interpretation Selected sample = turquoise

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 4211 | Semi-natural grassland with trees (T.C.D. ≥ 30%) |
| Number of samples selected for the class | 10 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 10 | |
| Class user's accuracy | 100,00 % | |
| Class user's accuracy (CI) | ± 0,0000 | |
| Class producer's accuracy | 87,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct 10 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 90 % | Correct 9 - Missing and unnecessary parts 0 - Missing parts 0 - Unnecessary parts included 1 |
| Positional accuracy | 100 % | Correct 10 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | It is not easy to differentiate between 4212 and 4211 in neighbour polygons. Not too much open grassland should be included. |
| Typical reference information used / minimum required for decision | | Airphoto. |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Very important type for Natura 2000 grasslands and also nationally valuable seminatural traditionally managed habitats. |
| EXAMPLE (typical appearance): | | |



Good interpretation Selected sample = turquoise

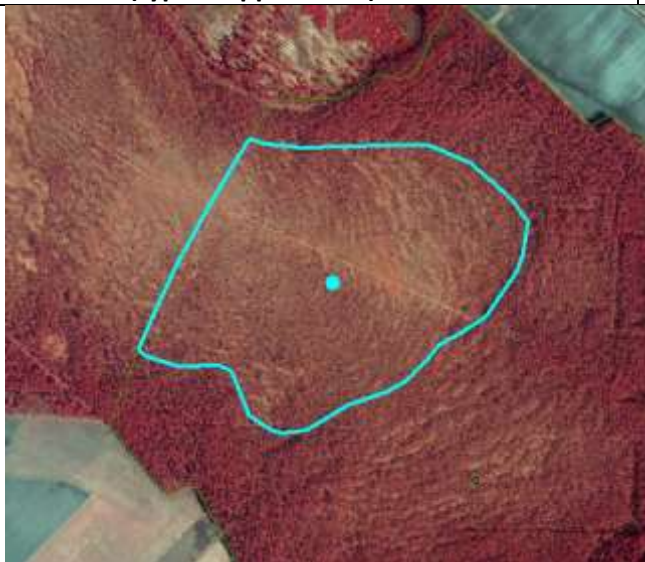| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 4212 | Semi-natural grassland without trees (T.C.D. < 30%) |
| Number of samples selected for the class | 10 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 8 | |
| Class user's accuracy | 80,00 % | |
| Class user's accuracy (CI) | ± 0,2613 | |
| Class producer's accuracy | 57,74 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct 10 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 40 % | Correct 4 - Missing and unnecessary parts 0 - Missing parts 2 - Unnecessary parts included 4 |
| Positional accuracy | 100 % | Correct 10 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | It is not easy to differentiate between 4212 and 4211 in neighbour polygons. Not too much TCD should be included. |
| Typical reference information used / minimum required for decision | | Airphoto. |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Very important type for Natura 2000 grasslands and also nationally valuable traditionally managed seminatural habitats. |
| EXAMPLE (typical mistakes): | | |



Woody parts in the south (unnecessary parts).

Selected sample = turquoise

### III. Characterization of the dataset by LC/LU class - 7.2.1.2 Unexploited peat bog

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 7212 | Unexploited peat bog |
| Number of samples selected for the class | 4 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 3 | |
| Class user's accuracy | 75,00 % | |
| Class user's accuracy (CI) | ± 0,4900 | |
| Class producer's accuracy | 100,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct  4 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 100 % | Correct  4 - Missing and unnecessary parts 0 - Missing parts 0 - Unnecessary parts included 0 |
| Positional accuracy | 100 % | Correct  4 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | |
| Typical reference information used / minimum required for decision | | Topographic database, airphoto. |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Only 4 samples. A stable class (if not exploited as arable land or peat extraction). |
| EXAMPLE (typical appearance): | | |



Selected sample = turquoise

**III. Characterization of the dataset by LC/LU class -   9.1.1.1 Interconnected running water courses**

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 9111 | Interconnected running water courses |
| Number of samples selected for the class | 10 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 9 | |
| Class user's accuracy | 90,00 % | |
| Class user's accuracy (CI) | ± 0,1960 | |
| Class producer's accuracy | 100,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 90 % | Correct  9 - Too coarse 1 - Too detailed 0 |
| Correctness of delineated area | 70 % | Correct  7 - Missing and unnecessary parts 0 - Missing parts 3 - Unnecessary parts included 0 |
| Positional accuracy | 100 % | Correct  10 - Shifted 0 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Usually  interpreted according to the class definition. Still, there is a question about the width: usually there is no change in habitats although the 9111 polygon ends. |
| Typical reference information used / minimum required for decision | | Topographic database, airphoto. |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | The banks of narrow rivers are very important seminatural habitats if managed traditionally. |
| EXAMPLE (typical mistakes / typical appearance): | | |



Wrong delineation, parts missing. Selected sample = turquoise, Other samples=orange, Protected area=green.

| DATASET | N2K | Natura 2000 status layer 2012 |
|---|---|---|
| LC/LU CLASS | 9211 | Natural water bodies |
| Number of samples selected for the class | 9 | |
| CORRECTNESS OF LC/LU CODE | | |
| Number of correctly interpreted samples | 9 | |
| Class user's accuracy | 100,00 % | |
| Class user's accuracy (CI) | ± 0,0000 | |
| Class producer's accuracy | 100,00 % | |
| Class producer's accuracy (CI) | ± 0,0000 | |
| CORRECTNESS OF DELINEATION | | |
| Detail of delineation | 100 % | Correct  9 - Too coarse 0 - Too detailed 0 |
| Correctness of delineated area | 40 % | Correct  4 - Missing and unnecessary parts 0 - Missing parts 1 - Unnecessary parts included 5 |
| Positional accuracy | 90 % | Correct  9 - Shifted 1 |
| CHARACTERIZATION OF THE CLASS | | |
| Typical mistakes (misclassification, wrong delineation, etc.) describe in detail | | Usually quite well delineated, sometimes near forest borders can be missing parts. |
| Typical reference information used / minimum required for decision | | Topographic database. |
| Typical appearance of the class in samples (habitats, cultivation type, land use etc) | | Small lakes are typical to southern agricultural areas. |
| EXAMPLE (typical mistakes / typical appearance): | | |



Missing stripe of water in the south-east Selected sample = turquoise, other samples = green.