

GOOD PRACTICE WORKSHOP Bonn, 7-8 June, 2016

Defining High Nature Value farming areas in Estonia

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HNV farmland in the frame of Estonian RDP

In the current Estonian RDP context

Supported HNV areas = semi-natural habitats in Natura 2000 under special agri-environment measure.

According to Estonian Nature Protection Development Plan there should be 45 000 ha of managed semi-natural habitats by 2020



Semi-natural habitats



Wooded meadow (6530)



Wooded pasture (9070)



Coastal meadow (1630)



Wooded meadow (6530)



Nordic alvars (6280)



Wooded pasture (9070)



Boreal heaths (4030)

~ **120 000 ha** of potential semi-natural habitats (SNH)

~ **77 000 ha** covered by Natura 2000

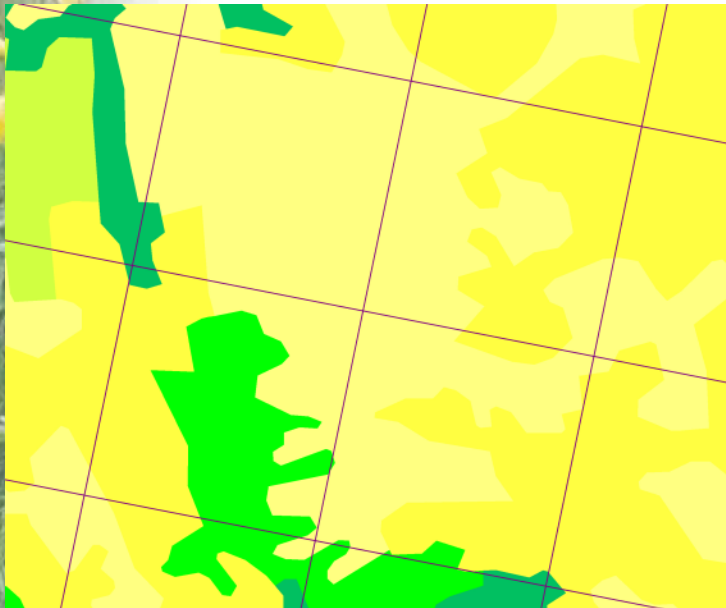
~ **25 000 ha** (~30%) of that N2000 SNH covered by special RDP AE support for management of SNH

~ **2500 ha** are managed in addition by the finances of the MoE (life to alvars etc)

One small example of the accuracy of the data EU versus country level

Actually one and the same place, two different databases, you get the feeling that there were two different places

1 – Corine LandCover
(2-5 areal objects in square)



2- Ortophoto (more than 100 areal objects in square Basicmap)



EU HNV map problems



Solution - process of defining the HNV areas for Estonia

- National HNV work group was established in 2009 in ARC for common understanding and development of HNV concept suitable for Estonian conditions
 - ARC, MoA, MoE, Paying Agency, universities, NGOs involved
 - Discussions on suitable mapping methodologies
 - Inclusion of information on farming intensity and landscape mosaic into HNV mapping methodology
 - Discussions on future scenarios for potential implementation of new HNV concept
- The proposed methodology and calculations were finalized in early 2016.



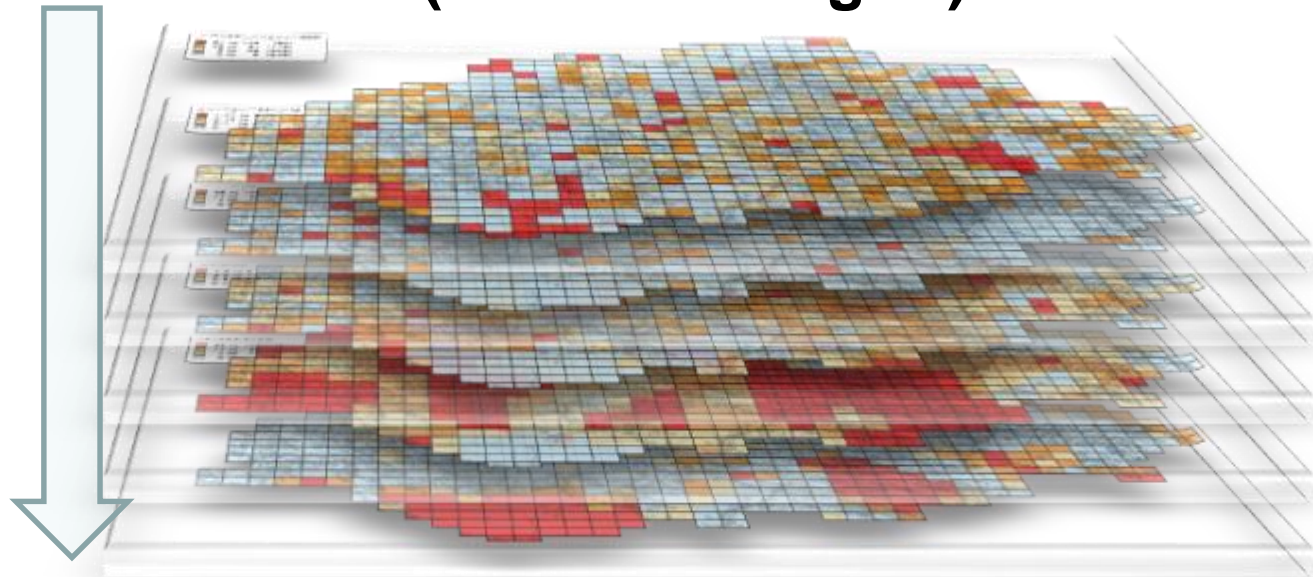
Process of defining the HNV areas for Estonia

Datasets used in the assessment of High Nature Value agricultural land:

- Estonian Nature Information System (EELIS).
- Estonian Topographic Database (ETAK).
- Livestock data from the Paying Agency Information System (LPIS).
- EU data base on farm characteristics (IACS).
- Livestock Units (LU).
- Utilized Agricultural Area (UAA).
- Data base on Semi-Natural Habitats (SNH).
- Estonian Digital Soil Map scale 1:10 000 with 109 soil taxonomic units (EDS).

Process of defining the HNV areas for Estonia

**Grid mapping approach agreed
(1×1 km EEA grid)**



Twenty appropriate indicator parameters were selected, which were each divided into classes to produce indicator values according to expert judgement.



Process of defining the HNV areas for Estonia

Different ranges are required for each variable to produce indicator values that can be combined into a single score to identify HNV land.

The ranges for each parameter need to be determined by expert judgement to ensure that the divisions are reliable indicators of biodiversity and are given the following values-0 for no value and 5 for the highest value within each parameter.

These values are then added together to obtain a single value for each 1 km square. Landscape parameters are divided statistically.

HNV characteristics, 4 Groups with scores

Group 1 : Land use management:

- G1_1 **Permanent grassland** on agricultural land, derived from IACS data as % of UAA in LPIS
- G1_2 **Short term grassland** on agricultural land, derived from IACS data as % of UAA.
- G1_3 **Density of livestock units** by species per hectare of UAA within a 2 km buffer zone derived from IACS.)
- G1_4 **Organic farming area** on agricultural land derived from IACS data as % of UAA.
- G1_5 **Peat soils** on agricultural land derived from EDS data as % of UAA.

HNV characteristics, 4 Groups

Group 2 : Nature conservation indicators:

- G2_1 **Semi-Natural Habitats** on agricultural land derived from EELIS for SNH land as % of UAA.
- G2_2 **Managed Semi-Natural Habitats** on agricultural land derived from EELIS for managed SNH land as % of UAA.
- G2_3 **Number of farmland birds** in 1km squares derived from Estonian Bird Atlas data.
- G2_4 **Protected areas and Natura 2000** sites on farmland derived from the aggregated layer of EELIS and IACS as % of UAA.
- G2_5 **Number of I, II and III category protected species** derived from EELIS.

HNV characteristics, 4 Groups

Group 3 : Landscape diversity indicators:

- **G3_1 Simpson Landscape Diversity Index** using buffered linear features derived from ETAK added to surface features on agricultural land, to derive the Index.
- **G3_2 Length of linear elements** on agricultural land derived from ETAK.
- **G3_3 Number of point elements** on agricultural land derived from ETAK.
- **G3_4 Number of agricultural field** parcels derived from LPIS by using centroids of the physical units.
- **G3_5 Edge length** of agricultural field parcels (m/1 km square) derived from LPIS by summing the lengths of the field margins.

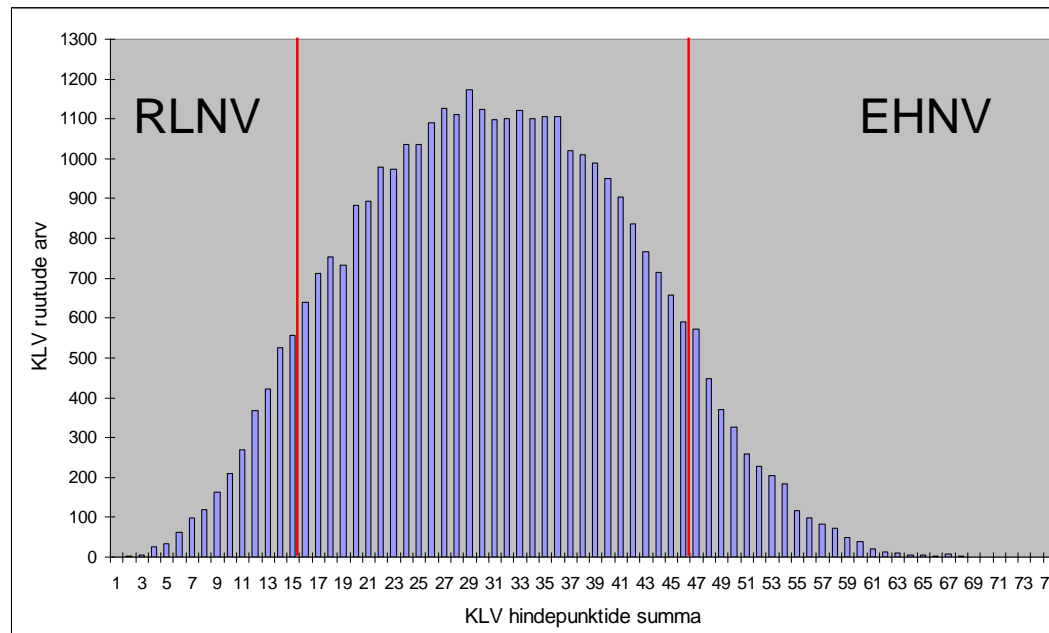
HNV characteristics, 4 Groups

Group 4 : Landscape structure (Natural quality indicators):

- G4_1 **Length of altitude contours** with intervals of 2.5m derived from ETAK.
- G4_2 **Spring fed fen soils** on agricultural land as % of
- G4_3 **Diversity of soils** using the Simpson Index calculated from the occurrence of different soil types on the EDS.
- G4_4 **Length of natural rivers and streams (m)** derived from ETAK.
- G4_5 **Weighted area of average soil quality** on agricultural land as % of UAA derived from EDS and IACS.

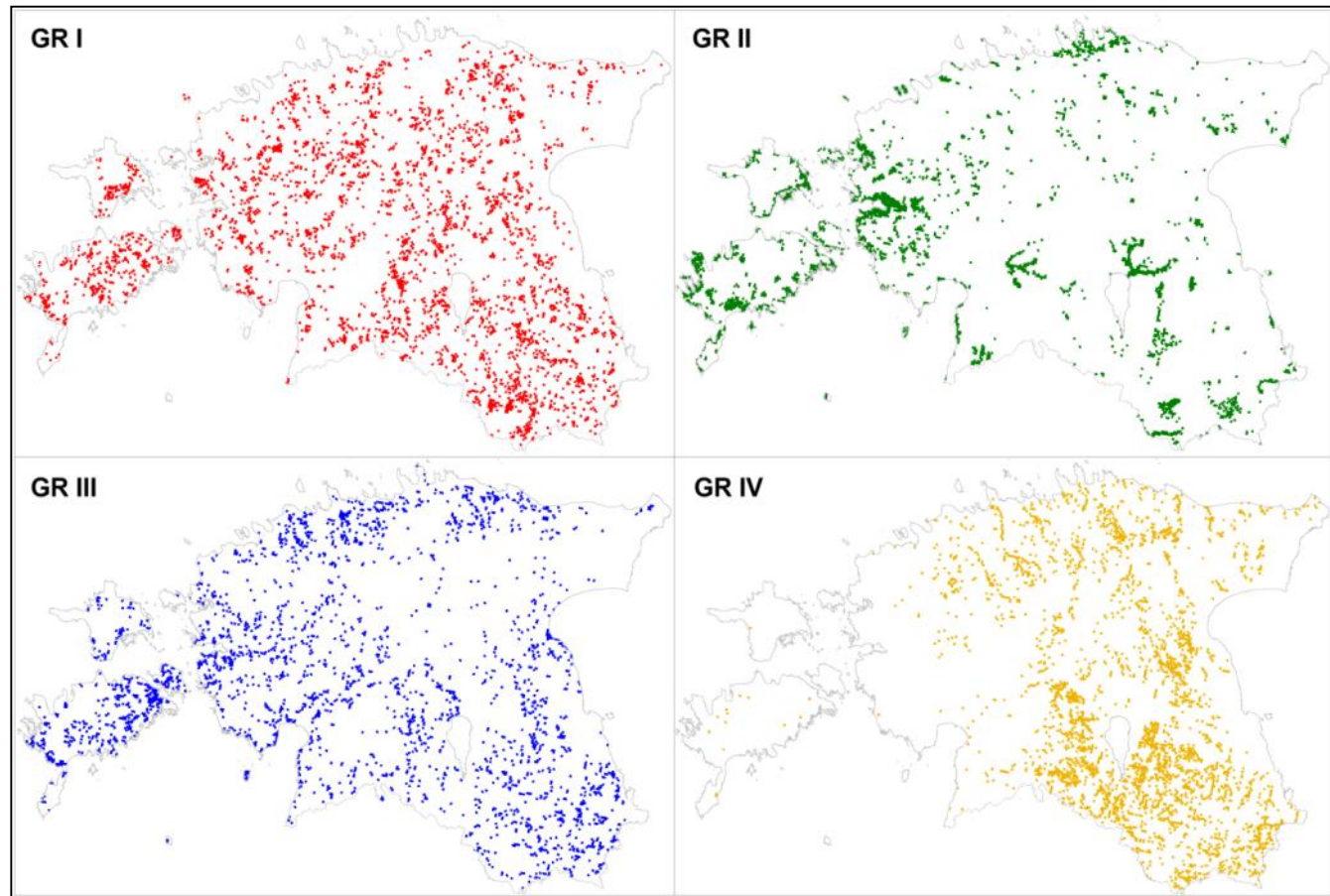
HNV characteristics, 4 Groups

The frequency histogram of the scores for all 1 km squares with agricultural land in Estonia shows a normal distribution. The top and bottom 10% of 1km squares (3707 and 3501 squares respectively) were identified in order to investigate the structure of the data further. The former are termed Exceptionally High HNV (EHNH) and the latter Relatively Low HNV (RLNV).

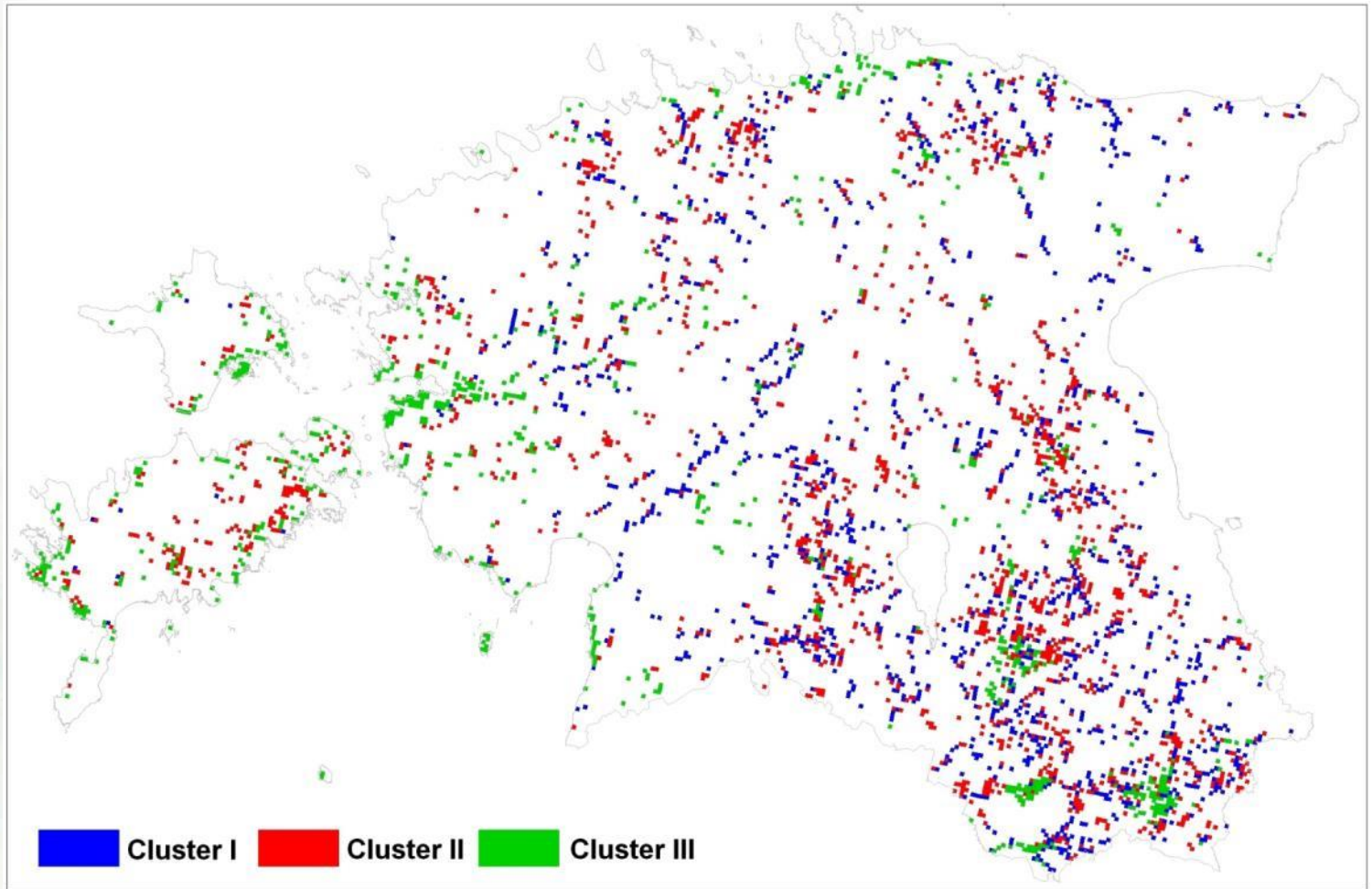


HNV characteristics, 4 Groups

Figure shows upper 10% (decile) values of the four indicator groups. Indicators are independent, there is no spatial correlation between the highest values of the 4 groups!



HNV characteristics, 3 clusters



Cluster 1, alluvial meadow, Pedja River alluvial meadow



A. Ader photo

Cluster II, Mosaic agricultural landscapes, hilly landscapes, Vooremäe and Kurese



A. Ader

A. Ader

Cluster III, Coastal meadows

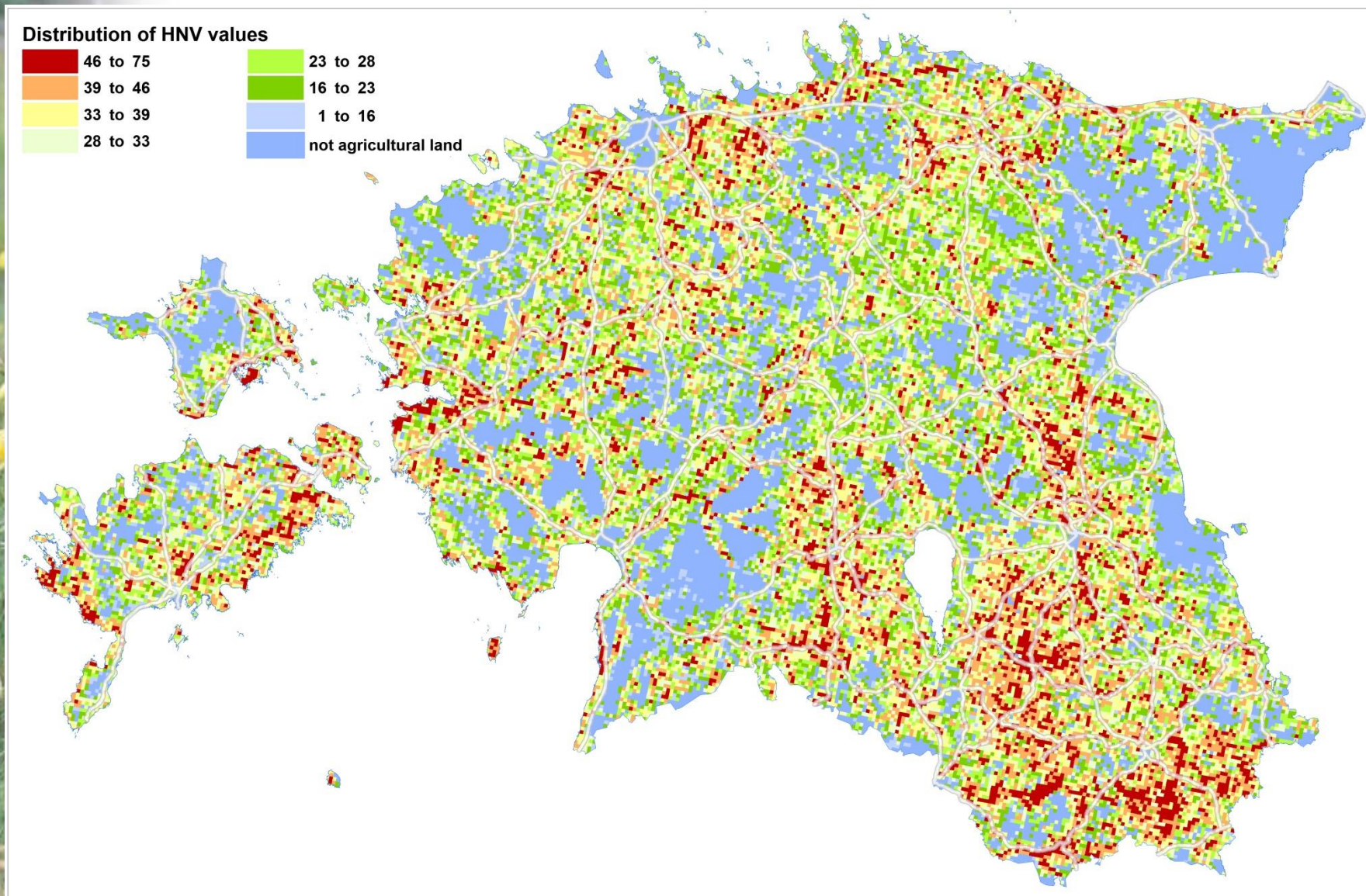


A. Ader

Relatively Low HNV (RLNV) ameliorated fields



New HNV map 1x1 km



Landuse within Exceptionally High HNV 1x1 km squares

Organic farming area 47 000 ha (all Estonia 132 802 ha), 18% from all EHNV ≥ 46 landuse.

Environmentali frendly managed area 87 587 ha, 34% from all EHNV ≥ 46 landuse.

Seminatural habitats area 18 767 ha, 7% from all EHNV ≥ 46 landuse and ~75% from managed SNH areas in Estonia.

3 together **59%** from all EHNV ≥ 46 landuse.

The average size of individual fields in EHNV ≥ 46 squares is 4,8 ha.

Interpreting results based on HNV types

Type 1: Farmland with a high proportion of semi-natural vegetation.

Semi-natural habitats are present in almost 30% of HNV squares (10 477 squares, in total approx 122 000 ha).

Type 2: Farmland dominated by low intensity agriculture or a mosaic of seminatural and cultivated land and small-scale features.

3,6% of total HNV squares (1271 squares, approx 66 717 ha). Consisting of 10% the most valuable part of group 1 and group 2 and managed semi-natural habitats. Cluster analyses indicated that in the squares with highest value characteristics describing low intensity and landscape heterogeneity are in general rather high.

Type 3: Farmland supporting rare species or a high proportion of European or World populations.

11% of total HNV squares (3729 squares, approx ~ 114 344 ha) based on adding up first protection category and Group 2 results ≥ 13 points.

Main practical challenges and gaps with HNV identification and assessment

- Find the right source of spatial datasets
- To develop a technical solution for data analysis
- Not enough background information (UAA versus other landuse, not supported agricultural land, spatial information about use of pesticides and fertilizers, etc...)
- National Topographic Data does not renew fast enough (ortophoto OK, but vector datasets....)

Main practical challenges and gaps with HNV monitoring

- Currently quality of the farmland under HNV can be indirectly monitored via the general monitoring in semi-natural habitats in Natura 2000 area. General Natura 2000 semi-natural habitats monitoring is carried out under the Ministry of Environment, by the Estonian Environmental Agency.
- We have good quality spatial information about agricultural and environmental subsidies in UAA land, these changes, we can assess and monitor but....we need additional information
- Our proposal is to use HNV squares for a complex monitoring in a future, develop a system (indicator species and landscape change, fieldwork, remote sensing and/or drones)



Why grid-based solution?

Grid based approach
enables to:

- bring out variations of HNV farmland and identify more valuable areas
- update and add new data operationally;
- use aggregated and analyzed grid cell information by different stakeholders;
- combine different data spacially (e.g. nature values & agricultural statistics);
- develop monitoring system

Why is this HNV-tool important?

- Based on real situation in HNV grid cells → provides possibilities to search deeper and define regional needs and adapt policy accordingly.
- It is a workspace - the defined areas are not automatically support eligible, but provides the basis to work out measures if needed
- Proposal with methodology and calculations has been finalized and given over to MA in spring 2016.



Thank you!

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