THE NAVARRA (NORTHERN SPAIN) APPROACH TO IMPLEMENTING THE HNV INDICATOR

2nd International workshop on pastoral landscape and conservation: "Large-scale extensive grazing systems in Europe: advancing knowledge to improve policy".

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INTRODUCTION

• In 2009 the *Government of Navarra* (Northern Spain), entrusted the work: “Identificación, caracterización y monitorización de los Sistemas Agrícolas y Forestales de Alto Valor Natural en Navarra”,

• With the aim of Monitoring the Rural Development Programme of Navarra 2007-2013.

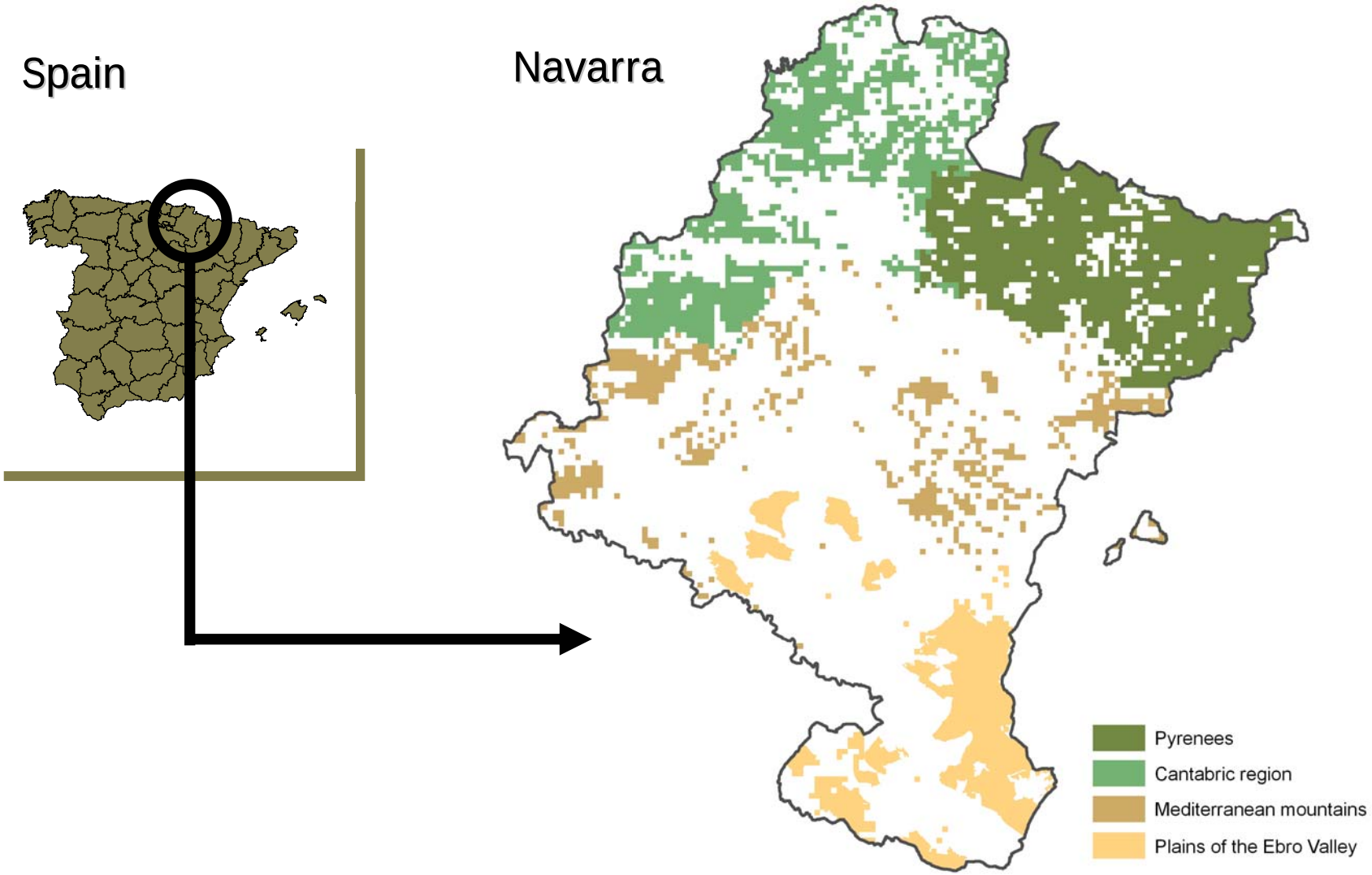
INTRODUCTION

- With that objective and to carry out this work, HVNF were assumed to be as defined in the documents from the *European Evaluation Network for Rural Development*:
    - TYPE 1: areas with a high proportion of semi-natural vegetation.
    - TYPE 2: areas in a mosaic structure with low level of intensification.
    - TYPE 3: areas with threatened species or a high proportion of European or world species.

INTRODUCTION

- The approach followed in Navarra to find the HNV systems present in the territory involved the next steps:
  - ***IDENTIFICATION***.
  - ***CHARACTERIZATION***.
  - ***MONITORING***.

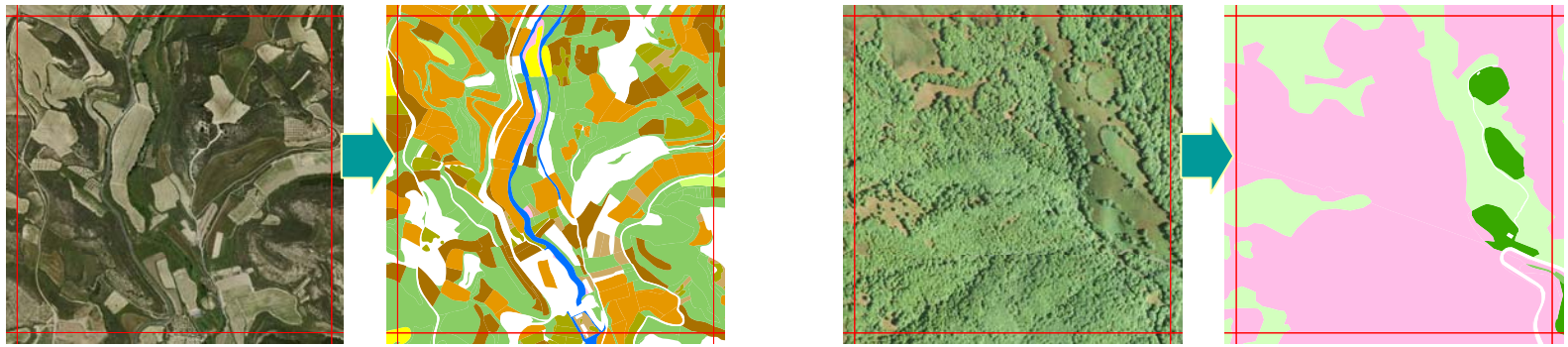
IDENTIFICATION OF HNVF IN NAVARRA



IDENTIFICATION OF HNVF IN NAVARRA

- Identification process based in the Land Use Map 1:5.000, created with different sources.

- Division of Navarra in cells of 1km^2, to work at a landscape rather than parcel level.



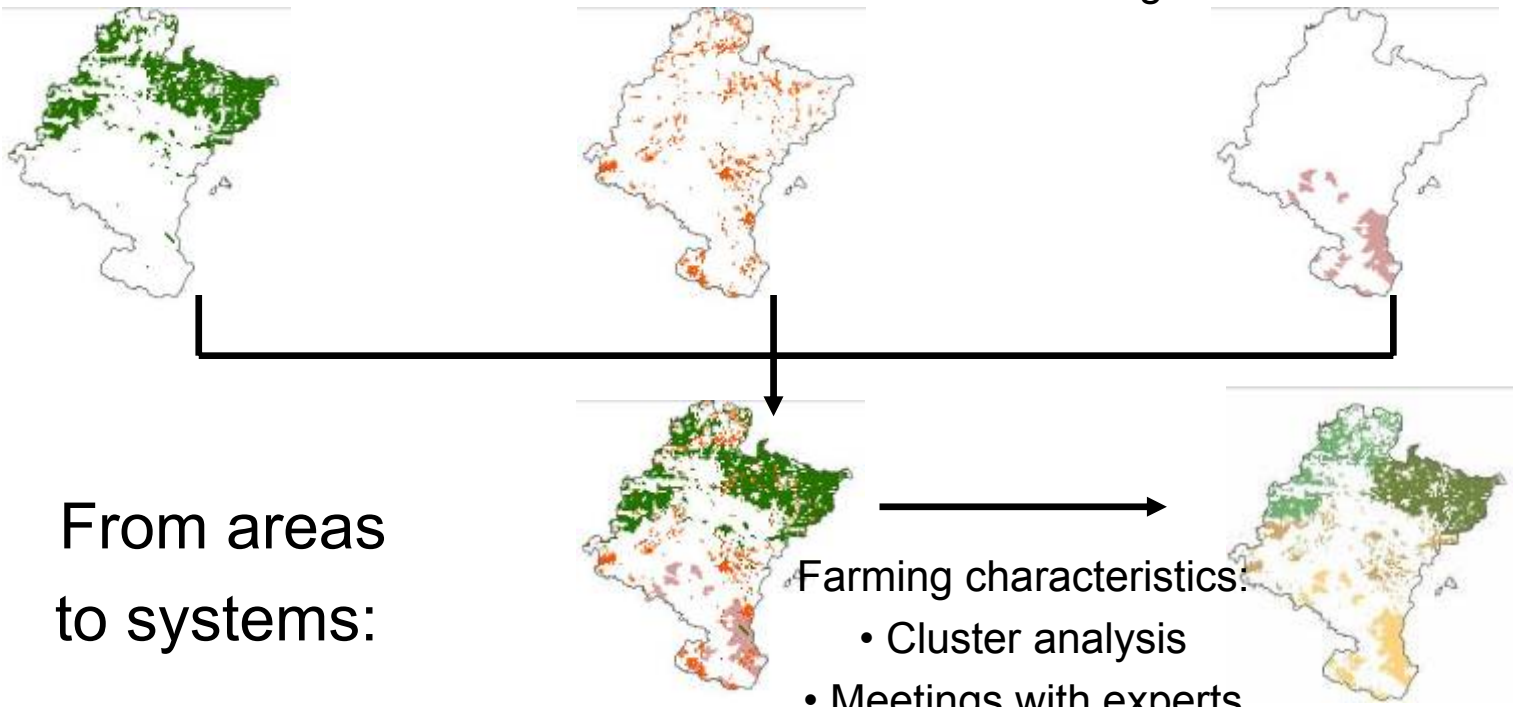
IDENTIFICATION OF HNVF IN NAVARRA

- Selection of areas (cells of 1km^2):

TYPE 1: cells where 100% of the agrarian land use is semi-natural.

TYPE 2: cells with landscape indexes >$\bar{x}+\sigma$.

TYPE3: other farmland not selected by Types 1&2, with high levels of biodiversity.



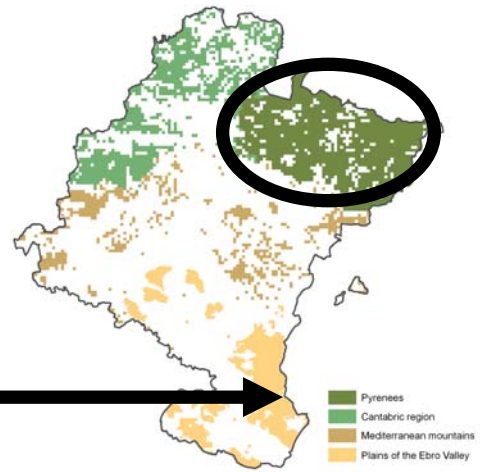
- From areas to systems:

Farming characteristics:

- Cluster analysis
- Meetings with experts

CHARACTERIZATION OF HNVF:
Pyrenees of Navarra (TYPE 1)

- Mountainous area, with big temperature changes, and zones covered with snow several months a year.
- High proportion of semi-natural grassland and meadows surrounded by widespread semi-natural forests.
- Livestock main farming activity, with low-intensity grazing.
- Seasonal migration of livestock.



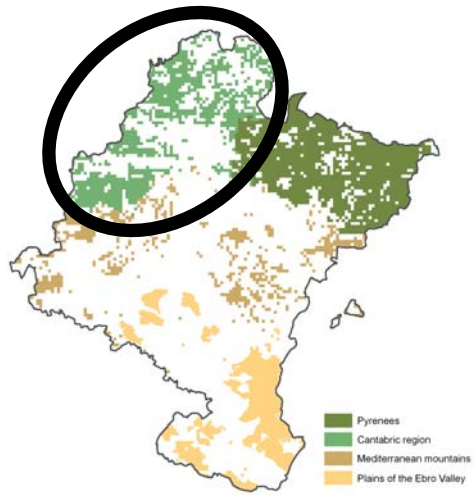
Burguete horse and *Pirenaica* cows

Example of flora and fauna species linked to the farming activity of the area:

Bearded vulture (*Gypaetus barbatus*)

CHARACTERIZATION OF HNVF:
Cantabric region of Navarra (TYPES 1 and 2)

- Mountainous area with lower altitude, close to the sea, wet, and with softer temperatures.
- Heterogeneous countryside and high variety of grazing areas (grassland, meadows, brackens, scrubs, forests).
- Livestock main farming activity, with low-intensity grazing.
- Vertical migration of autochthonous livestock, with extensive grazing in high parts of the mountainside.



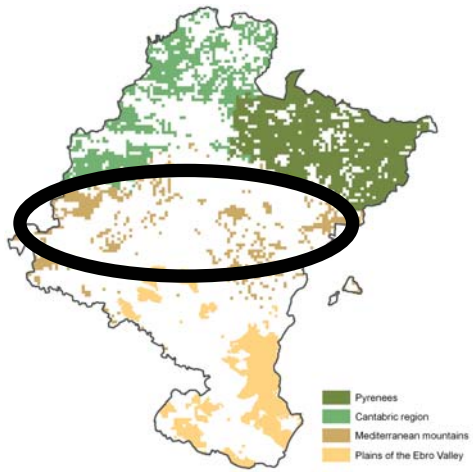
Latxa sheep

Example of fauna species linked to the farming activity of the area:

Griffon vulture *(Gyps fulvus)*

CHARACTERIZATION OF HNVF:
Mediterranean mountains of Navarra (TYPE 2)

- Low mountains and valleys, lower rainfalls and warm summers.
- Traditional farmland found in the sloppiest parts of hillsides, where agricultural land forms a mosaic of herbaceous crops and orchards.
- Presence of livestock and agricultural activities.
- Sheep main grazing species, found in scrubs and stubble.



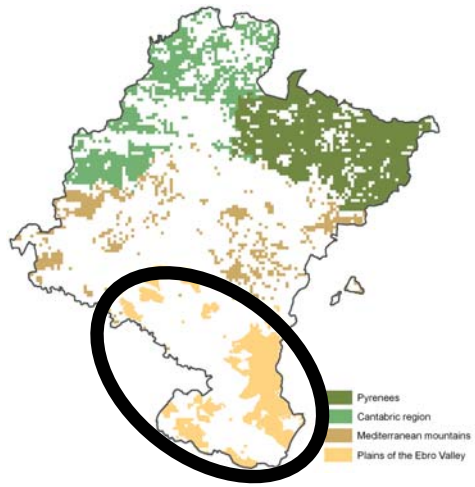
Example of fauna species linked to the farming activity of the area:

European toad *(Bufo bufo)*

Common wall lizard (*Podarcis muralis)*

CHARACTERIZATION OF HNVF:
Plains of the Ebro Valley of Navarra (TYPE 3 and 2)

- Basin of the Ebro river, with more scarce and irregular rainfall, big temperature oscillation, strong wind.
- Mix among farmland under certain levels of intensive production, irregular and small agricultural parcels, annual rotation between cereal, fallow and semi-natural grassland.
- Presence of livestock and agricultural activities.
- Mostly cereal crops interesting for steppe birds like Great Bustard, Lesser Kestrel, or Pin-tailed Sandgrouse.



Rasa Navarra sheep

Example of fauna species linked to the farming activity of the area:

Great bustard *(Otis tarda)*

Pin-tailed Sandgrouse *(Pterocles alchata)*

Stone curlew *(Burhinus oedicnemus)*

Dupont`s Lark *(Chersophilus duponti)*

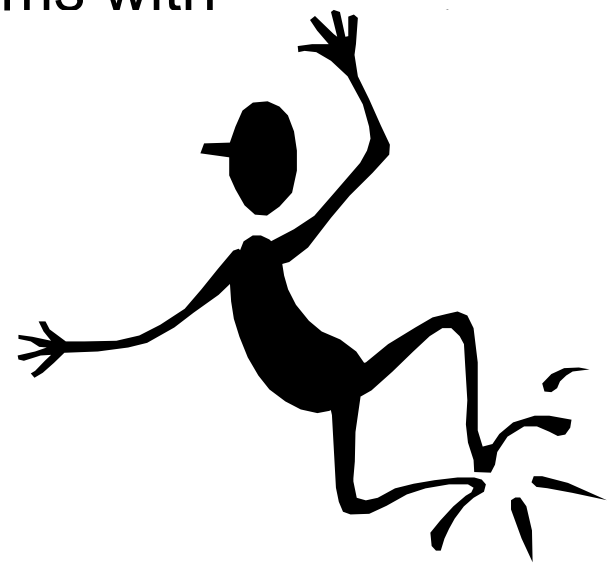
MONITORING HNVF IN NAVARRA

- Different systems face different specific problems and opportunities and need different approaches and solutions.

- Is it possible to monitor all the systems with ONE SOLE INDICATOR?

We haven't found it yet.

Our solution was….



MONITORING HNVF IN NAVARRA

- ***INDICATOR NET***: calculating not one, but a group of indicators.

- ***SCALE / LEVEL***: working both at regional (or national) and system scales.

    - ***Regional indicators***: few indicators that asses the situation at a regional (or national) level (already calculated in Navarra).

    - ***System indicators***: more specific indicators, both quantitative and qualitative, that asses the status of every HNV system, and that are useful to to design future management plans or programmes (in Navarra for 2011).

MONITORING HNVF:
At level of region (or country)

- Regional indicators:
  - Calculated in all the territory (also in areas that haven't been assigned to a HNV farming system).
  - Few indicators.
  - Relatively easy to calculate.
  - Accessible data for all the territory.
  - Measurable every year.
  - Comparable to a national or a European level.

MONITORING HNVF:
At level of region (or country)

Field	Indicator	Value in Navarra	Units
Extension	HNVF hectares	**332.329**	has
	% over the total territory	**31,98**	%
Characteristics of farms	Number of autochthonous livestock units Sheep Cattle Horse	**124.261** **88.562** **30.618** **5.081**	LU
	% over the total LU Sheep Cattle Horse	**54,97** **91,53** **27,65** **27,39**	%
	Average patch size	**4,90**	has
	Edge density	**0,20**	km/ha
	Simpson Diversity Index	**0,72**	*No units*
Census of the target species	Great bustard (*Otis tarda*) Black-bellied Sandgrouse (*Pterocles orientalis*) Pin-tailed Sandgrouse (*Pterocles alchata*)	**30** **450 - 750** **400 - 450**	Number of individuals

MONITORING HNVF:
At level of SYSTEMS (for 2011…)

- System indicators:
  - Calculated only in the defined systems.
  - As many indicators as considered useful.
  - Specific for every system. What is interesting in a system might not be useful for another one (transhumance-fallow), so not comparable at a national or European level.
  - Useful to design future management plans or programs in the area where a system is found.
  - Not necessarily easy to calculate.
  - Data not always available since more specific data could be needed. Therefore official statistical data should be completed with specific studies in the area, fieldwork, surveys, samples, interviews…
  - Periodicity depends on the availability of the data.

MONITORING HNVF:
At level of SYSTEMS (for 2011…)

- Examples of indicators that asses **SIZE AND EXTENTION**:

Pyrenees of Navarra

- Has. of semi-natural pastureland.
- Has. of meadows in areas of slope.
- % of area in common land.

Cantabric region of Navarra

- Has. of semi-natural pastureland.
- Has. of meadows in areas of slope.
- % of area in common land.

Mediterranean mountains of Navarra

- Has. of semi-natural land use.
- Has. of non-irrigated orchards (specially olive groves, vineyard and almonds).

Plains of the Ebro Valley of Navarra

- Has. of semi-natural land use.
- Has. of fallow.
- % of fallow over the agrarian area.

MONITORING HNVF:
At level of SYSTEMS (for 2011…)

- Examples of indicators that asses

CHARACTERISTICS AND PRACTICES OF FARMS:

Pyrenees of Navarra

- LU under transhumance.
- Autochthonous LU and % over the total.
- LU that graze in common pastureland.
- Farms and % with 1, 2 or 3 livestock species.
- Calendars and methods of meadows mow.
- Stocking rate, Inputs (N/ha, use of pesticides).

Cantabric region of Navarra

- Has. of brackens mow.
- Autochthonous LU and % over the total.
- LU that graze in common pastureland.
- Heterogeneity indexes.
- Calendars and methods of meadows mow.
- Stocking rate, Inputs (N/ha, use of pesticides).

Mediterranean mountains of Navarra

- Pruning calendar and methods.
- Spontaneous vegetation under orchards.
- Maintenance of good agrarian practices.
- Calendar of fieldwork.
- Heterogeneity indexes.
- Yield / ha, Inputs (N/ha, use of pesticides).

Plains of the Ebro Valley of Navarra

- Shepherding.
- Spontaneous vegetation in fallow.
- Autochthonous LU and % over the total.
- Calendar of fieldwork, crop rotations.
- Heterogeneity indexes.
- Yield / ha, Stocking rate, Inputs.

MONITORING HNVF:
At level of SYSTEMS (for 2011…)

- Examples of indicators that asses **BIODIVERISTY**:

Pyrenees of Navarra

- Diversity of flora in semi-natural pastureland and meadows.
- Monitoring of the ecological quality of the pasture habitats of interest.

Cantabric region of Navarra

- Diversity of flora in semi-natural pastureland and meadows.
- Monitoring of the ecological quality of the pasture habitats of interest.

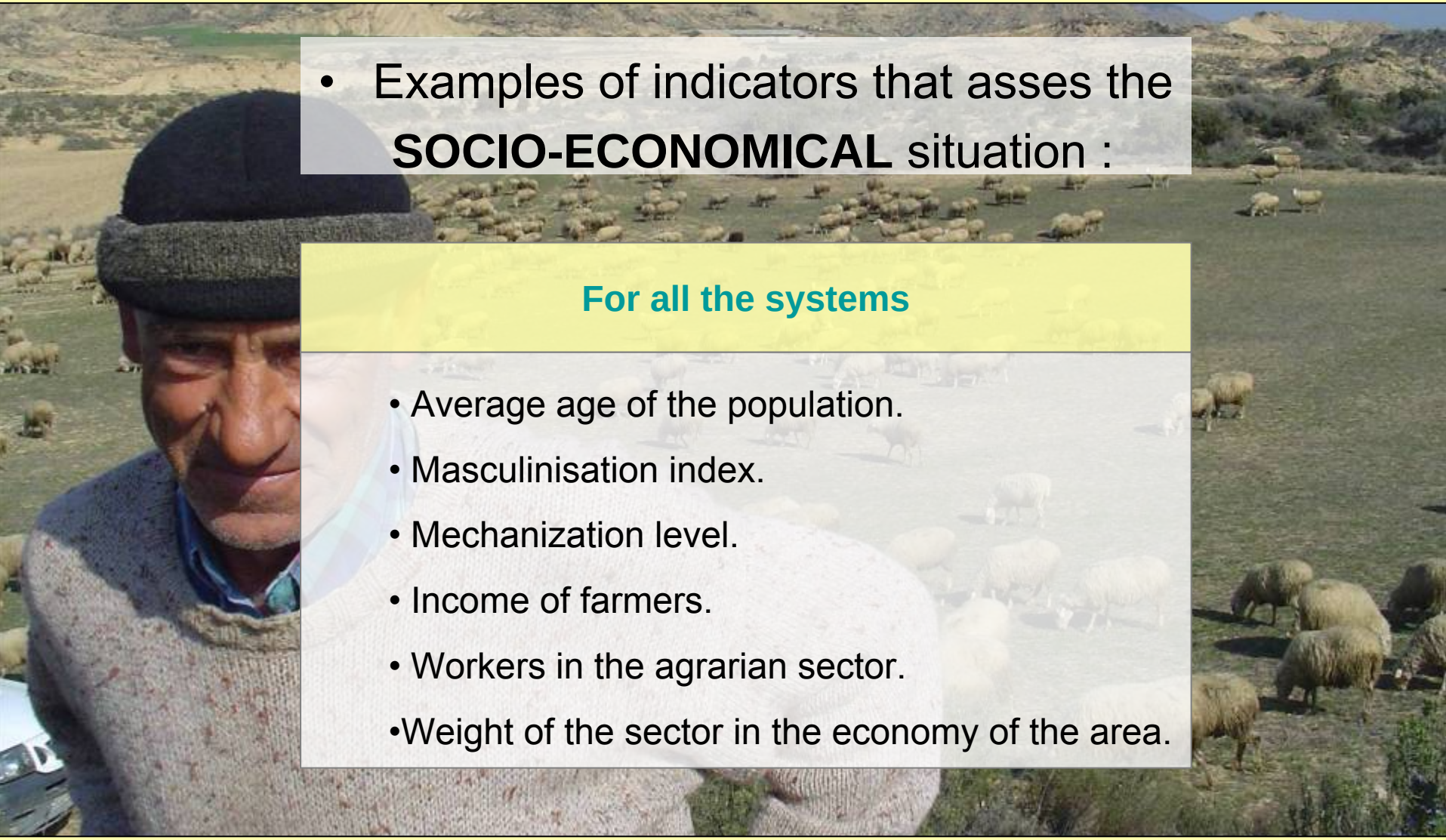
Mediterranean mountains of Navarra

- Definition and monitoring of the natural values associated to the farming system.

Plains of the Ebro Valley of Navarra

- Census of the target species.
- Indexes of absolute and relative abundance.

MONITORING HNVF:
At level of SYSTEMS (for 2011…)



- Examples of indicators that asses the **SOCIO-ECONOMICAL** situation :

For all the systems

- Average age of the population.
- Masculinisation index.
- Mechanization level.
- Income of farmers.
- Workers in the agrarian sector.
- Weight of the sector in the economy of the area.

CONCLUSIONS

- HNVF systems support an important part of Europe´s biodiversity, therefore it's important to know their status and their space-time evolution.

- In order to monitor the evolution of the HNVF systems, a previous identification and characterization processes should be done.

- It would be optimal to select a few regional indicators that are measurable in any region of Europe.

- Calculating indicators on a system scale seems essential in order to use this information when designing future plans and management programmes.


VIELEN
DANK !!