THE LIVESTOCK LANDSCAPE IN THE ALPINE REGION

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“Landscape” is here meant as “capitale” of elements and/or functions, which by sustaining natural or anthropogenic ecosystems allow “benefits” (De Groot, 2006; Kienast et al., 2009; Bolliger et al., 2011).

<table>
<thead>
<tr>
<th>Function</th>
<th>Goods and services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productive</strong></td>
<td></td>
</tr>
<tr>
<td>Flora and fauna</td>
<td>Feeds (venison, mushrooms, …), raw materials, biodiversity</td>
</tr>
<tr>
<td>Cultivation and livestock products</td>
<td>Vegetal and animal foods, organic products</td>
</tr>
<tr>
<td>Forestry products</td>
<td>Timber, non-woody products</td>
</tr>
<tr>
<td>Transports and living structures</td>
<td>Roads, pathways, transport on water “ways”</td>
</tr>
<tr>
<td><strong>Energetic</strong></td>
<td>Coal, hydroelectric power, wind power</td>
</tr>
<tr>
<td><strong>Regulating</strong></td>
<td></td>
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<tr>
<td>Climatic</td>
<td>Carbon sequestration, GHG regulation</td>
</tr>
<tr>
<td>Natural risks</td>
<td>Landslips and floods protection …</td>
</tr>
<tr>
<td>Water</td>
<td>Drinking water, irrigation</td>
</tr>
<tr>
<td>Pollution</td>
<td>Air and water quality</td>
</tr>
<tr>
<td>Erosion</td>
<td>Soil stability</td>
</tr>
<tr>
<td>Biologic control</td>
<td>Weeds, phytopathology, pests…</td>
</tr>
<tr>
<td><strong>Natural environment conservation</strong></td>
<td>Habitat maintenance</td>
</tr>
<tr>
<td><strong>Culture and leisure</strong></td>
<td></td>
</tr>
<tr>
<td>Aesthetic pattern</td>
<td>Landscape elements, agro tourism, excursions…</td>
</tr>
<tr>
<td>Cultural</td>
<td>Cultural heritage, Eco museums, exhibitions…</td>
</tr>
<tr>
<td>Artistic</td>
<td>Natural elements in pictures, photos, documentaries, movies…</td>
</tr>
</tbody>
</table>
Alpine livestock farming trend and relevant landscape functions
Livestock and alpine landscape
Alpine livestock farming systems in the Alps: abandonment and intensification

Abandonment 1980-2000 in the Alps (Streifeneder et al., 2005; mod.)
Productive aims

• Increased livestock farming in more favorable areas

• Increase of cosmopolite breeds and decrease of autochthonous ones

• Alpine pasture loss of interest

• Cheese making more concentrated in factories and lost of lore and traditional systems of direct and short food chain in alpine pastures
<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>Variation 1990-2010 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Livestock sector in the Italian Alps</strong> (Battaglini et al., 2014, in stampa)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Meadows and pastures (ha)</strong></td>
<td>1,109,367</td>
<td>1,016,180</td>
<td>812,236</td>
<td>-26.6</td>
</tr>
<tr>
<td><strong>Cattle (n.):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farms</td>
<td>43,774</td>
<td>26,949</td>
<td>21,221</td>
<td>-51.5</td>
</tr>
<tr>
<td>Heads</td>
<td>578,484</td>
<td>492,701</td>
<td>446,531</td>
<td>-22.8</td>
</tr>
<tr>
<td>Heads/farm</td>
<td>13.2</td>
<td>18.3</td>
<td>21.0</td>
<td>+59.2</td>
</tr>
<tr>
<td>Dairy cows</td>
<td>275,605</td>
<td>223,115</td>
<td>194,440</td>
<td>-29.4</td>
</tr>
<tr>
<td>Dairy farms</td>
<td>37,803</td>
<td>20,924</td>
<td>15,157</td>
<td>-59.9</td>
</tr>
<tr>
<td>Dairy cows/dairy farm</td>
<td>7.3</td>
<td>10.7</td>
<td>12.8</td>
<td>+76.0</td>
</tr>
<tr>
<td><strong>Sheep (n.):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farms</td>
<td>7,901</td>
<td>6,279</td>
<td>4,402</td>
<td>-44.3</td>
</tr>
<tr>
<td>Heads</td>
<td>175,274</td>
<td>176,054</td>
<td>191,713</td>
<td>+9.4</td>
</tr>
<tr>
<td>Heads/farm</td>
<td>22.2</td>
<td>28.0</td>
<td>43.6</td>
<td>+96.3</td>
</tr>
<tr>
<td><strong>Goats (n.):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farms</td>
<td>7,221</td>
<td>6,258</td>
<td>4,442</td>
<td>-38.5</td>
</tr>
<tr>
<td>Heads</td>
<td>84,455</td>
<td>95,872</td>
<td>89,625</td>
<td>+6.1</td>
</tr>
<tr>
<td>Heads/farm</td>
<td>11.7</td>
<td>15.3</td>
<td>20.2</td>
<td>+72.5</td>
</tr>
</tbody>
</table>
Production aims

• Alpine livestock farming represents a minority compared to livestock of the plain
• But it’s important in terms of gross production income in mountain region (30 to 80%)

• Richness in local and high quality products (e.g. 57% of Italian PDO cheeses) (Battaglini et al., 2006; Thomet et al., 2011; Bovolenta et al., 2010)
• Alpine livestock farming is the only way for a sustainable way of conserving local breeds (Hoffman, 2011)
Regulating aims

Alpine livestock farming and nutrient and GHG emissions

• Intensive or extensive LF systems? (Garnett, 2010; Soussana et al., 2010)

• Needings of research in the field (e.g. Ecological footprint, LCA) (De Jong, 2009; Penati et al., 2010)

LFS and water regulation (Leitinger et al., 2010)
Habitat and biodiversity aims

- On a territorial scale meadows and pastures breaking woods continuity increase the richness of vegetal and animal species

- On a farm scale an extensive (and rational) management increases vegetal and animal biodiversity
Habitat and biodiversity aims

- Effects of the reforestation of slopes on the change of the landscape

Dolomiti (Veneto, NE Alps)
Habitat biodiversity

• Intensive cultivations determine an oversimplification of bottom valleys open habitats (Giupponi et al., 2006; Sturaro et al., 2009)

• Abandonment determines meadows and pastures involution (Cocca et al., 2012)
Habitat and biodiversity aims

- Intensification, abandonment and biodiversity evolution
Livestock biodiversity
Cultural and leisure functions

• European Landscape Convention
  • Art 1. “Landscape” means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors;

• Percezione simbolico-identitaria (Massarutto, 2002; Kianicka et al., 2010)

• Percezione estetica e fruizione turistica (Corti, 2004; Lehmann et al., 2007)

• Percezione storico-antropologico-culturale (Batzing, 2005; Salsa, 2010)
Cultural and leisure functions

Cultural resources of alpine livestock landscape

Tangible heritage:
- *Vernacular architecture* (barns, stables, dairies, etc.).
- *Semi-natural elements* (wells, fences, etc.) and artifacts (fountains, bridges, stone walls border stone, fences, etc.).
- *Tools* (for transportation, milk processing, etc.)

Non tangible heritage:
- *Knowledge and learning livestock related* (animal behavior, product processing, botanical knowledge and meadows and pastures management, ...)
- *Linguistic heritage* (place names, vocabulary ..)
- *Heritage folklore* (legends, taboos, rituals and festivals, ...)


• Handcraft
• Food and diet: products and recipes
• Figurative art, poetry, prose, etc.
• Folklore: civic traditions / religious, legends, folk art, etc.
Cultural and leisure functions

Interreg III a (2000-2006) I-CH

Ecomuseum of Sheep Farming (Ecomuseo della Pastorizia)
Pietraporzio Valle Stura – CN
Cultural and leisure functions

- Architecture identity and esthetical value
Cultural and leisure functions
Cultural and leisure functions

- Loss of the identity bond

*Drawings submitted by children in a competition of local primary schools*

*International Congress «Whose Alps are these?» Agordo (Belluno, I), September 2011*
Problems, opportunities, research exigencies
Research on alpine LFS

- Identification and mapping of cultural landscapes
- Geographical diversification of livestock systems
- "Farming styles" and attitudes of farmers
- Ecological footprint of alpine livestock systems
- Management of meadows and pastures and biodiversity (Natura 2000)
- Forage and nutraceutical properties of foods of animal origin (plant biodiversity)
- Multi-functionality and interactions with other sectors
The sustainability of the alpine LFS landscape

1. The social figure of the farmer
2. Cultural and aesthetic enhancement
3. Tourism promotion

1. Diversification of income
2. Quality enhancement
3. EU policies and contribution

1. Management of semi-natural habitats
2. Excretions and GHG reduction
3. Interaction with wildlife
4. Livestock biodiversity

Economic

Ecologic

Socio-cultural
Useful links

- Italian society for alpine livestock systems [http://www.sozooalp.it/](http://www.sozooalp.it/)
Family Farm

- Home to the family, place of belonging
- Links past, present, future
- Place for learning, knowledge building
- Provides income, food and nutrition
- Nexus family-farm
- Provides main part of labour force
- Controls its main resources
- Tied to rural landscape, its environment
- Active part of rural economy
- Keeps culture alive
Thank you for your attention

photos by M. Verona, L. Ramirez, L. Battaglini