

Transhumant animal husbandry as a tool of species conservation

The project Transhumant Rangeland Use and Networking of Protected Areas helps to conserve European species diversity in times of climatic change. The IPCC (2008) has just offered a deep insight into ongoing climatic change and its impacts on earth. If global average annual temperature rises by 5°C it is expected that around the globe more than 40% of all species will become extinct. For Europe, Thuiller et al. have aligned a niche-based climate-envelope model that predicts the proportion of extinct plant species depending significantly on the ability of species to migrate. Until 2080 it is expected that under the assumption of no-migration between 50% and 70% of European plant species are to classify as vulnerable, endangered or extinct, meanwhile under a full-migration-assumption this share falls to 22% until 37%. The magnitude of these projected risks is really alarming and it is even topping the impacts of toxic pollutions from industry and modern agriculture, or that habitat-degrading impacts of fire, drought, flood and erosion. All these impacts on biodiversity are highly significant and of key relevance since global losses of biodiversity are irreversible.

This process has already started, and it is expected to accelerate, even though fixed objects of climatic gas reductions might be reached. It was supposed that climatic variability and human land use make rangeland ecosystems even more susceptible to a rapid degeneration of ecosystem properties.

Co-evolution: Providing a Tool of Plant Species Conservation

Species diversity and manifold complexity of species interactions have been identified as most important aspects in the evolution of biological diversity. It is crucial to understand the mutual interactions of species if we want to preserve the species diversity. All these interactions are linked to evolution through the processes of specialisation and selection, summarized as co-evolution. These co-evolutionary connections do support the plant species in the divine sequence of living, reproducing and dying, in this magnificent equation of evolutionary survival.

Different studies have shown a close interdependence between both the evolution of rangeland vegetation and mammalian herbivores. Thereby rangeland species make use of herbivores as a vector of long distance seed dispersal. While plants are stationary this process builds their only option in the search of new, more adapted biomes. Such movement of seeds increases the probability for species' evolutionary survival.

Nowadays in Europe, this tool of plant

evolution is strongly restricted due to our society. Landscapes are overdeveloped resulting in natural corridors which were developed over centuries are now cut or destroyed.

Sheep Transhumance

A man-made solution of assisting species' survival has to be found most urgently, due to lack of plant migration and the imminence of climatic change. Thus we propose to reanimate sheep transhumance like it has been carried out in the Mediterranean since a long time ago. The rangelands of two complementary climatic zones get connected by seed-transmigration.

It has been shown that sheep are able to play a decisive role in long distance seed dispersal. More than 8.000 diaspores of 80 different plant species have been found in the fleece of one dummy sheep passing in spring through southern German mountainsides. Further, over 4.000 diaspores have been calculated to be ingested by one sheep in the spring of central Spain. Additionally, positive effects of gut passage on the germination rate of seeds as well as facilitation of seed establishment caused by sheep trampling have been identified.

All this mentioned facts convince to re-establish sheep transhumance as a form of animal husbandry as soon as possible while it serves as a most effective conservation tool with a low cost-accounting purpose.

The Spanish Example

One of the most important experience of sheep transhumance can be found on the Iberian Peninsula. It is a territory of outstanding climatic and topographic diversity, and

thus it is mostly adapted to a transhumant animal husbandry. This may have started with primeval game herbivores which moved seasonally to avoid water and food shortages. More than 8.000 years ago human started to organise the transhumance of cattle. Some 3.000 years ago the Phoenicians introduced for trading purposes the sheep as transhumant livestock. Since then it has been the predominant Iberian form of animal husbandry. Afterwards, the Celts bred a wool-sheep to improve the output of ewe husbandry. Then, the Romans used sheep wool for fashion. In the 6th century AD the Visigoths introduced fixed drover roads between winter- and summer-rangelands and established a law book to rule the coexistence of herders and farmers. Finally, in the 8th century AD the Moorish tribe Benimerino bred the Merino wool sheep. Thus the groundwork for Spain's medieval wool production was established.

1.273 AD Alonso X. founded an association of sheep breeders, the *Honrado Concejo de Mesta*; in 1.347 AD Alonso XI. copied the Visigoth drover roads system mainly consisting of the so called *cañadas reales*. Thus the coexistence of herders and farmers was settled again: rangelands of Southern and Northern Spain were connected (v.i.), and a decisive base to maintain the exceptional herb species diversity of the Iberian peninsula was created.

The Ending of Transhumance

Until the beginning of the 20th century transhumance was traditionally practised. The situation changed after the construction of the railway linking the south and the north. A majority of the herdsman welcomed this modern way of transport that saved them the long and often arduous walk along the drover roads. Thus, just a few years nearly all herds were transported by rail.

This change had an extraordinary environmental impact, until now not taken adequately into consideration. The journey to

Traditional Drover Roads through Spain, the so called *cañadas reales*



northern mountain areas by train, and more recently by truck, takes only one day. Therefore, the herds do not leave their winter pasture areas until mid to late June when they can be certain of warm weather and abundant pastures in the mountain areas. Unfortunately, this four or five week delay in departure in the very critical season from mid May to mid June, is crucial to most regeneration processes of Mediterranean ecosystems. The neglect of transhumance and the persevering permanence of the herds in their winter pastures causes:

1. an overgrazing of pastures, with a negative impact on the long term conservation of grassland diversity;
2. a frustration of tree renewal in southern Spain, while all young trees are avidly devoured once pastures have dried at the end of spring;
3. the pollution and depletion of water points causing negative impacts for the survival of aquatic fauna and amphibians;
4. the destruction of shelter and food resources being vital for terrestrial fauna due to the overgrazing of pastures;
5. a disturbance of the reproductive cycles of sensitive species due to an extended presence of livestock, sheep dogs and shepherds, and direct destruction of the eggs and young chicks of birds that nest on the ground.

The Basis of Conservation

In the last decade, more studies have focused on ecosystem services of extensively used rangelands, as there are the production of water, erosion control, climate amelioration, pollination of crops as well as the aesthetic pleasure and their function as a carbon-dioxide sink. These rangelands are globally the most important carbon-sink while covering half of the earth's surface.

Therefore, the European Union aims at creating more areas of valuable fauna, flora and habitat. These National Parks excel in areas sufficient in size for being protected from most human development and pollution, either in largely undeveloped feature

areas with exceptional native animals, plants and ecosystems, or developed areas with the goal of returning to area's native state as closely as possible. The protected areas are included in monitoring programs with the aim to fit the conditions of species abundance.

Moreover, green corridors or drover roads get arranged to connect these areas. They cope with the task of facilitating an exchange of individuals between several populations, and lowering the inbreeding rate within each population as well as re-establishing of already extinct populations.

Although the number of protected areas as well as the recognition of sustaining ecosystems is constantly growing, there is also a growing amount of problems about these ecosystems. All the given impacts of deforestation, habitat conversion, spread of neophyt species, an ecologically not sustainable economy caused by industrial and agricultural contaminations, they are devastating the ecosystems and their plant diversity.

In this context a most important observation is the disappearance of traditional herdsman who generally dispose of an unrecoverable

Transhumant Flock of Sheep and their Shepherd in the Alpujarra, Province of Granada, Southern Spain



will be organized. The final chords of this project will be played in Morocco, an African country, the origin of the Merino wool-sheep, and besides the location of the worldwide most important research about this topic realized by FAO/UNDP: *Transhumance for Biodiversity Conservation in the Southern High Atlas*.

Our project will be dedicated to the children of our planet. Children are sheep's best friend. Meanwhile some ignorant adults associate this marvellous grazing animal with stupidity, children love to touch and to accompany them. And, of course, if we talk about sustainability and future ... we talk about our children: Sustainability is made for them and for their children. Children are the clients of future!

The TRUNPA-project will be escorted by a publicity equipe which confirms:

- an implementation oriented project in which communication is a most central object. Politicians might hear TRUNPA as a trumpet;
- a sustainability oriented project;
- an agricultural and animal husbandry oriented project promoting a coexistence of herders and farmers

In these times of climatic change humankind needs a change of agricultural mentality.

Let's go for this change!

Potential Green Corridors in Germany



indigenous knowledge. These transhumant escorts and monitors are just terminating their challenge mostly by going into retirement.

The Rising of Transhumance

Due to the threats of climatic change by a rapid rural appraisal a solution to conserve traditional transhumance has to be found. A step forward to a sustainable human society is needed as well as an ecologically adapted agriculture and an animal husbandry, which protects the environment and produces healthy food. We have got to say: "Intensive agriculture and livestock holding need a change to mitigate climate change". Let's go for this change!

On the 9th of January of 2009 Jesús Garzón proposed to answer a historic transhumant track of 1865 between Segovia, Spain and Dresden, Saxony. In 2010 an extended transhumant track from Prague until Andalusia, and onwards into the High Atlas of Maroc, touching Marrakech and Quarzazate

Further Reading

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