

Potential for Conservation Projects in Agriculture and Sustainable Use – Dr Julie Ewald

Background

ESUG has six Thematic Working Groups that facilitate interaction between ESUG members, IUCN Specialist Groups and other organisations. These cover Agriculture, Forestry, Fisheries, Business, Wildlife Species and Plants & Fungi. Working towards sustainable agriculture is particularly challenging as the world heads towards a population of 8 billion humans, with a welcome increase in global prosperity, but also facing Climate Change and degradation of natural capital. The current body of work covering the research, policy and education on the topic of sustainable agriculture is immense. In this paper we consider two aspects of sustainable agriculture research and policy that several of us have been involved with and which might be useful for either expansion of current ESUG portal projects or projects in the future – wildlife (or biodiversity) and soil conservation and sustainable use – which are, of course, not mutually exclusive.

Agriculture has been dramatically transformed through modernisation over the past century. These changes have increased food production efficiency, but they have also contributed to a widespread decline in farmland biodiversity. Across society, this degradation is widely recognised as a serious problem, with agricultural activities considered one of the most prevalent threats facing threatened or near-threatened species (Maxwell, *et al.*, 2016 Nature).

Projects present and possible future?

Several projects undertaken by ESUG, either as an organisation or by its members, have helped to disseminate information on how best to conserve wildlife and biodiversity in an agricultural landscape, ensuring both food production but also the maintenance of natural resources and ecosystem services in this landscape. One example is the **Perdix Portal (Perdixnet)**– launched in 2017 with International Association for Falconry and the Conservation of Birds of Prey (IAF). The Perdix Portal was designed to aid nature restoration by creating an online network of wildlife experts using the grey partridge (*Perdix perdix*) as a flagship for conservation activities, particularly in an agricultural landscape.

Coincident with the launch of Perdixnet, the GWCT, in collaboration with ten other partner organisations, embarked on a **North Sea Region Interreg** programme project called **PARTRIDGE** (Protecting the Area's Resources Through Researched Innovative Demonstration of Good Examples - <https://northsearegion.eu/partridge/>) that will run to 2020 across five countries in the North Sea Region. The project is showcasing how farmland wildlife can be restored by up to 30% at ten 500-hectare demonstration sites (two in each country), using the grey partridge as a flagship species for management plans at demonstration sites. Several organisations well represented among ESUG members (FACE, GWCT, IAF) serve on the steering committee of PARTRIDGE. As results from the demonstration areas, together with other outputs from the project are available, these should be used to update Perdixnet. The approach of this project (demonstrations across several countries, using a focal species that has sustainable use possibilities) and outcomes from it may be useful for future ESUG projects.

Another recent development in the UK has been **Farmer Clusters** (<https://www.farmerclusters.com/>). The GWCT, with Natural England (UK Government), jointly developed the concept of Farmer Clusters. These consist of farmers voluntarily working together, at the landscape-scale (rather than as separate farms), devising their own conservation plans, supplementing but underpinning existing agri-environment schemes and facilitated by an experienced advisor chosen by them. Funding for the facilitators comes from the Natural England Countryside Stewardship Facilitation Fund, with 98 Farmer Clusters currently funded. This

collaborative, bottom-up approach to conservation fits well with the sustainable use and local empowerment that has been supported by ESUG and its members and may also be useful for considerations for future ESUG projects.

Conservation Considerations for Soil Biodiversity – Prof Mari Ivask (11 April 2019)

Fertile soils are the basis of agricultural production, and hence the basis of mankind's development. Soil is also one of the largest reservoirs of biodiversity, with an estimated one-third of the Earth's biota. Sustainable use of soils preserves a good soil structure, maintains and increases soil biological activity and production capacity.

Nutrient exchanges between organic matter, water and soil are essential to soil fertility and need to be maintained for sustainable agriculture (FAO). The farmers should follow these principles: the content and quality of soil organic matter must ensure the supply of nutrients and humus recovery; soil biota must be numerous and active, which accelerates the decomposition of organic matter and makes nutrients available to plants; roots must have good growing conditions, which also promotes plant growth.

Soil degradation is a result of soil biodiversity loss, organic matter or nutrient depletion, soil acidification or salinisation, soil compaction or contamination, and soil erosion. The humus that makes the soil fertile is largely made up of carbon. The most effective way to bring carbon back into the soil is permanent crop production. The longer the plants grow on the soil, the more they reach the soil through carbon. By maintaining soil carbon content we protect the climate but also keep the soil sustainable.

Farmers can improve the soil by using measures including:

- To apply appropriate crop rotation
- To provide sufficiently organic matter in the soil, by using cover crop if necessary, for example undersown crop or catch crop.
- To schedule and organize soil tillage so that the soil structure is not damaged, to use a minimum-tillage technique that does not cause the soil profile to break.

Soil is an important and often overlooked element of the climate system. It is the second largest CO₂ store after the oceans. The restoration of the main terrestrial ecosystems and the sustainable use of land in urban and rural areas help us mitigate and adapt to climate change.

Soil carbon losses are driven by changes in land use which may lead to soil degradation and the loss of soil organic matter. The drainage of peatlands, clearcutting forests and soil sealing are main factors of releasing of methane and CO₂, contributing to the atmospheric carbon pool.

The soils are under increasing pressure because of the World's population growth and rising demand for food and competition for land use. The conservation of nature, animals and plants is generally accepted but little attention has been paid to conservation of soils. Although soil is one of the most important but underestimated natural resources of the Earth, soil is not subject to a comprehensive and coherent set of rules in the EU (http://ec.europa.eu/environment/soil/index_en.htm). Policies of the EU in areas such as agriculture, water, waste, chemicals, and prevention of industrial pollution do indirectly contribute to the conservation of soils, but these policies have other aims and scope of action - they are not enough to ensure an adequate level of protection for all soils in Europe.

Possibilities.

Update Perdixnet and consider how to expand the number of countries with active national satellites.

How will the PARTRIDGE project fit into PerdixNet? Are there other possibilities for ESUG to spread the results of PARTRIDGE?

Collaborative Conservation - Farmer clusters –can ESUG help to take this concept further? Are there other similar developments in countries represented by ESUG membership that could link up and take the concept further?

Soil Conservation – how can we take work on the sustainable management of soil further? Can we interweave soil conservation and biodiversity? Can we provide cross -border support for soil sustainability?