European Commission

Science for Environment Policy

Framework shows potential for 'rewilding' abandoned European farmland

17 September 2015
Issue 427

Source: Ceaușu, S., Hofmann, M., Navarro, L. M., Carver, S., Verburg, P. H. & Pereira, H. M. (2015). Mapping opportunities and challenges for rewilding in Europe. *Conservation Biology*. 29(4): 1017-1027. DOI: 10.1111/cobi.12533.

Contact:
silvia.ceausu@mespom.eu

Read more about:
Agriculture, Biodiversity, Land Use

Rewilding, a process of passive management focused on restoring natural ecological processes and reducing human influence on landscapes, could be used to restore the increasing amounts of abandoned agricultural land in Europe to more biodiverse wilderness. A new study has designed a framework to measure potential for rewilding in areas across Europe, highlighting in particular the potential of Natura 2000 sites and suggesting specific aspects of wilderness that future policies could address.

It is estimated that active cropland decreased by approximately 19% in Europe between 1950 and 2010. Changes including globalisation of markets, increased labour costs, and shifts in technology and productivity have all led to abandonment of farmland. Instead of creating agricultural policies and subsidies to maintain marginally productive farmland, some ecologists argue that allowing the land to return to a more natural state would yield several benefits. This process is known as 'rewilding'. The benefits include reduced loss of money through subsidies, proliferation of diminished native species, reforestation, and the restoration of ecosystem services provided by wilderness.

To help scientists and policymakers assess which areas of abandoned European farmland present the best opportunities for rewilding, researchers have created an assessment framework. Their study utilised land use change projections of the Dyna-CLUE model (a land cover change model which offers projections at a resolution of 1 km^2 for EU27 Member States and can be used to identify areas undergoing farmland abandonment) and four socio-economic VOLANTE scenarios[1] — which consider the different paths of policy and management choices Europe may follow in the future. These scenarios predicted that 4.2% of the land covering the Member States would be abandoned by 2040. The study was funded through the European Commission's HERCULES[2] and OPERAs[3] projects, and the German Research Foundation.

The researchers created a map indicating the 'wilderness quality' of areas. This is a measure of how easily these areas could transition to a more natural, rewilded state. The map measured four metrics: artificial light at night, human accessibility, proportion of harvested primary productivity, and deviation from potential natural vegetation. An area with high wilderness quality will have low levels of each of these metrics.

High levels of artificial light can affect animal communities and migratory behavior, while areas highly accessible to humans, such as those with roads and traffic, cause animals to avoid certain areas and facilitate the movement of invasive species. Harvested primary productivity and deviation from natural vegetation also indicate the state of vegetation in an area and should also ideally be low.

These metrics were measured using high-resolution satellite imagery, and light impact was measured by estimating how light sources affected nearby land over a radius of 10km.

At a Europe-wide level, the study found low levels of artificial light (87% of abandoned land is found within the 'darkest' one-third of the continent) and high levels of deviation from natural vegetation in abandoned farmland areas. However, when zooming in on individual regions, the results became more nuanced, owing to different socio-economic contexts.

Continued on next page.

To cite this article/service: "Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

European Commission

Science for Environment Policy

Framework shows potential for 'rewilding' abandoned European farmland *(continued)*

17 September 2015
Issue 427

Subscribe to free weekly News Alert

Source: Ceaușu, S., Hofmann, M., Navarro, L. M., Carver, S., Verburg, P. H., & Pereira, H. M. (2015). Mapping opportunities and challenges for rewilding in Europe. *Conservation Biology*. 29(4): 1017-1027. DOI: 10.1111/cobi.12533.

Contact:
silvia.ceausu@mespom.eu

Read more about:
Agriculture, Biodiversity, Land Use

Funding:
1. Developed as part of the Visions of Land Use Transitions in Europe (VOLANTE) project. VOLANTE was supported by the European Union's Seventh Framework Programme. See: http://www.volante-project.eu

2. Sustainable futures for Europe's HERitage in CULtural landscapES: Tools for understanding, managing, and protecting landscape functions and values (HERCULES) was supported by the European Union's Seventh Framework Programme. See: http://cordis.europa.eu/project/rcn/110482_en.html

3. Operational Potential of Ecosystem Research Applications (OPERAs) was supported by the European Union's Seventh Framework Programme. See: http://www.operas-project.eu/

The researchers found that different wilderness metrics will need to be prioritised in specific areas, and that 50% of farmland abandonment sites would occur in or within a five-kilometre radius of some Natura 2000 sites. These areas are often managed to maintain farmland properties instead of wilderness. They say Natura management practices could be expanded to facilitate rewilding of these areas and take advantage of the local wilderness quality.

The researchers suggest this framework could be used to facilitate rewilding in places where it is most feasible, or to customise management practices to improve aspects of wilderness quality in abandoned areas. For example, policies could attempt to decrease infrastructure in areas of high human accessibility where the existence of infrastructures is not justified anymore. The authors conclude that policies that try to increase wilderness quality can even be employed at a global level.