

From Abandoned Farmland to Self-Sustaining Forests: Challenges and Solutions

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In a global context dominated by forest loss and degradation, farmland abandonment may constitute a unique opportunity to restore native forest systems and forest ecosystem services. In Europe, 16 million hectares of agricultural land may be released by 2020, according to recent scenarios of land-use change (Keenleyside and others 2010). Farmland abandonment tends to occur in areas where agricultural activities lost economical viability, namely in areas of marginal farmland and in degraded land (Keenleyside and others 2010). The potential impacts of farmland abandonment for biodiversity conservation and the delivery of ecosystem services will vary according to the local environmental and cultural context. The responses to avoid or minimize impacts of abandonment should take into consideration both the environmental conditions of the ecosystem and the economic viability of the restoration or management approach (Chazdon 2008; Benayas and others 2007). In Europe, responses to the threat of farmland abandonment frequently rely on the conservation of traditional farmland habitats because of their value to many species that are adapted to human-modified habitats. An alternative response to farmland abandonment is the restoration of native forests. Abandonment may represent an opportunity to restore the habitat of many forest

species whose abundance has declined in the past, and may also improve the delivery of forest ecosystem services (Chazdon 2008; Benayas and others 2007). The aim of this restoration can be the development of self-sustaining forests, where natural ecosystem processes are sufficient to maintain forests without active human management, an important step towards rewilding landscapes (Klyza 2001). However, natural vegetation regeneration is a slow and complex process that may take decades and follows unexpected pathways, because of the high vulnerability of regenerating woodlands to disturbances. Therefore, the restoration of self-sustaining forest systems may benefit or even depend on human intervention, through the management of secondary succession processes that may accelerate regeneration and increase the likelihood of restoring diverse communities and ecosystem services.

This Special Feature discusses ecological restoration options for agricultural systems, particularly for marginal and extensive systems facing rural abandonment. The objective is to find efficient solutions to manage ecosystem services and biodiversity conservation in formerly human dominated landscapes. The perspectives offered by the two articles were presented during a symposium at the IUFRO Landscape Ecology International Conference dedicated to “Forest landscapes and global change” that took place in Bragança, Portugal, in September 2010.

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Benayas and Bullock (this issue) advocate the use of proactive management approaches intermediate between “land sparing” and “wildlife-friendly farming” (Phalan and others 2011), such as the use of “woodland islets”. This conciliates agricultural production and associated cultural landscapes with the enhancement of non-provisioning ecosystem services and biodiversity conservation, while also setting the bases for potential forest restoration in the future.

Navarro and Pereira (this issue) discuss the benefits and challenges associated with rewilding abandoned farmland. Rewilding is still controversial within the scientific community and for the public because of its perceived impacts for biodiversity conservation and ecosystem services. This article provides a critical review about the common perceptions and assumptions about landscape dynamics, and argues that rewilding ecosystems should be added to the policy-makers’ and practitioners’ toolkit of land management options.

Overall, we hope these articles will expand the discussion of the management of abandoned farmland and extensive agricultural systems and contribute to a better adaptation of landscape management strategies to regional environmental and cultural contexts.

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