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Abstract: The aims of this power point presentation are to illustrate some examples on the impact of land abandonment on wildlife, to examine the conservation implications of this phenomenon, and to identify gaps in knowledge and potentially important future research. It also provides maps for the wolf expansion in Italy and the actual habitat suitability.

Notes: power point presentation
LAND ABANDONMENT AND ANIMAL COMMUNITIES: WINNERS AND LOSERS

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Aims of this talk

Main points dealt with taken from a recent ms prepared for AVEC

1) To illustrate some examples on the impact of land abandonment on wildlife

2) To examine the conservation implications of this phenomenon

3) To identify gaps in knowledge and potentially important future research


This presentation will concentrate on examples from Europe
Land abandonment: shift from a given pattern of land use (often extensive/traditional farmland) to a less intensive one caused by the reduction of human activity, leading to a recovery of scrubland and eventually forest (but alternative patterns possible)
Why is traditional agriculture important to animals?

- Provides suitable habitats to open-habitat specialists
- Meets the requirements of species using multiple habitats
- Improves resource availability
- Further advantages by subtle mechanisms linked with human activity
AN EXAMPLE:
THE GREATER HORSESHOE BAT

Woodland important in early spring, but...

1) …pastures bordered by treelines and woodland preferred summer foraging sites
2) Dung beetles important prey
3) Cattle-browsed hedgerows provide optimal perches
4) Hedgerows used for navigation

Advice and support given in England to farmers in order to favour the presence of these features in the landscape

OTHER, SUBTLE EFFECTS

Snails passively dispersed by sheep
Effects on population genetic structure

Loss of farmland structures

Disappearance of rural practices

Vegetation succession

Flora

Foraging success

Suitability of spatial features for movement, reproduction, thermoregulation, etc.

Habitat structure

Landscape structure and dynamics

Fire

Survival, reproduction

Population size

Structure and dynamics of animal community
The effects of land abandonment: habitat/landscape structure

Loss of open habitats

Fragmentation of open habitats

Scrubland/forest expansion

Increased forest connectivity
(corridors, stepping stones)

In general, loss of landscape heterogeneity, but this does depend on the original landscape composition

*We can predict that this situation will favour forest species and harm open habitat specialists*
Land abandonment and bird decline

Loss of suitable foraging/breeding habitat for open habitat specialists

Loss of foraging grounds for birds of prey

*Aquila chrysaetos*

Central-eastern Italian Alps:

Nearest-neighbour distance correlated positively with the amount of woodland within the potential hunting range.

At current rates of forest expansion, data suggest a 5–9% density decline in the next 20 years.
Eagle owl *Bubo bubo*

In central Italy, decline also due to disappearance of cleared areas in beech forests and reduced prey availability.

Two nearby areas of Mediterranean France
1) an upland, abandoned area;

Switch to smaller prey following large rabbit mortality

In the upland less efficient foraging, less diverse diet

As a result, owl density and productivity fell and egg-laying was delayed.

**Disappearance of key resources linked with human activity**

Griffon vulture (*Gyps fulvus*)
Invertebrates and changes in habitat structure

Less investigated – data available for a few groups

Replacement of open habitat, sun-loving taxa and ecotone dwellers with dense vegetation, shade-loving species recorded in several invertebrate groups

e.g. Gastropods
Isopods and Myriapods
Orthopterans
Ants

In several cases, species diversity increases

Importance of a multi-scale approach
Disappearance of micro-habitats in farmland

Value of ponds, cattle troughs

*Natrix maura* in Spanish dehesas
*Discoglossus sardus, Discoglossus pictus* in Mediterranean areas

Dry walls and stone quarries offer shelter to many reptiles and to both hibernating and aestivating amphibians
The winners

In both invertebrates and Vertebrates, land abandonment has been found to favour forest species

More forest species (earthworms, land snails, birds) higher diversity for several groups

In the Mediterranean, most increasing forest birds are Eurosiberian, widespread taxa (Suàrez-Seoane et al., 2002. Biological Conservation 105: 333-344)

Forest species are often generalists with a favourable conservation status
Wolf expansion in Italy
Habitat suitability model

Future expansion?

Luigi Boitani and coll., REN project
The return of large predators: a big challenge for conservationists

Damage compensation not enough

Importance of wild ungulates

Value of traditional prevention
Some forest species need mature forest stages: will they ever be reached in abandoned regions?
Temporary benefits from abandonment
Finally harmed by woodland expansion

Species selecting intermediate vegetation stages

Diplopoda
*Cilindroiulus caeruleocinctus*
*Glomeris annulata*
*Leptoiulus belgicus*

Ants
*Aphaenogaster senilis*
*Tetramorium caespitum*

Reptiles
*Podarcis hispanica*

Birds
*Sylvia* spp. In the Mediterranean
Iberian lynx *Lynx pardinus*

Habitat disturbance maintains the scrubland-woodland mosaics harbouring rabbits.

In the past, traditional farming in mountain areas preserved such mosaics.

Increase in scrub density has reduced suitable habitat.

Populations of both rabbits and their feline predator are shrinking.
Pyrenean grey partridges (*Perdix perdix hispaniensis*) select scrubland


Successful breeders use a mosaic of dense and open scrubland, with seasonal differences: sparse (20-40%) and open (40-60%) scrublands important in spring.

To maintain the mosaic of dense and open scrubland required by the species in the long term, grazing and management are needed (Novoa *et al.*, 2002).
Managing abandoned areas

In many cases land abandonment is harmful to animal species having a direct conservation value (threatened taxa) or play a key role in ecosystems (e.g. lagomorphs)

*Grazing and prescribed fire may be used to counter vegetation encroachment*

Fire favours the survival of open habitat specialists, but some suitable patches must persist in the landscape to allow colonisers to reach newly available patches

Small-scale fires reduce the risk of large-scale ones which lead to massive habitat loss for forest species too

More data necessary on impact of fire on certain groups (e.g. fire may be detrimental to reptiles and amphibians)

*Is it realistic to manage a significant number of abandoned areas?*
Preserving traditional farming: the most promising approach

The “optimal” heterogeneity patterns found in extensive farmland, so important for conservation, are extremely difficult to reconstruct.

Preservation of traditional land use outside parks is an excellent way to enact the ‘Benefits beyond boundaries’ approach (2003 IUCN World Parks Congress)

Niche production, eco-tourism

Extensive farming should be encouraged both within parks and in their surroundings to ensure its complementary role in biodiversity preservation at a regional scale
Research: the way forward

Not all animal groups have received equal attention: risk of a bird-biased approach to landscape management.

A broader focus needed to reveal between-group interactions as well as identify coherent responses in different animal taxa; community-level aspects deserve attention.

Surrogate taxa for rapid assessment of faunal trends in abandoned landscapes

Multi-scale analyses should be encouraged

Development of models to predict population trends following abandonment
Interactions with other global change phenomena

Land abandonment and spread of alien taxa

Land abandonment and global warming

Synergy?

Confounding effects?
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