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Roadless areas as a post-2010 conservation target in Europe[1] *(Goals 5, 7, 8)*

With increasing road encroachment, habitat fragmentation by transport infrastructures, and consequential secondary development and facilitation of human access, has become a serious threat for European biodiversity. The negative effects of roads on populations, species and ecosystems are manifold and represent a main driver of biodiversity loss. Contrastingly, areas with no roads or low-traffic ("roadless areas") represent relatively undisturbed natural habitats and functioning ecosystems. They provide many benefits for biodiversity and human societies (e.g., landscape connectivity, barrier against pests and invasions, ecosystem services, see Table 1). Roadless areas gain special relevance in the context of climate change because of their higher resilience and buffering capacity. An analysis of European legal instruments, ranging from national laws to conventions and European Union directives, illustrates that, although most laws aimed at protecting targets which are inherent to fragmentation like connectivity, ecosystem processes or integrity, roadless areas are widely neglected. Given the numerous benefits they provide, we propose that the few remaining roadless areas in Europe should be an important focus of conservation efforts. An inventory of these areas should be of top priority. We also urge for the proper integration of roadless areas into transport policies; when possible the design of new routes should strongly avoid dissecting them. Finally, roadless areas may deserve to be included in the Habitats Directive as new target or site category. This would represent a concrete step towards the strengthening and adaptation of the Natura 2000 network to climate change.

More attention to common species as sub-targets/indicators[2] *(Goals 1, 8)*

Not only threatened species should be the focus of conservation priorities. Common species shape the world and are fundamental to the structure and functioning of ecosystems. Many rare species were once common (e.g. Atlantic cod *Gadus morhua*). There is a need to act in advance and pay increased conservation attention to common species (identify, monitor and alleviate significant depletion events).

Conflict between preservation of biodiversity and sustainable development[3,4,5] *(Goals 1,2,4)*

The promotion of the use of renewable energy, without appropriate considerations of biodiversity issues, is illustrative:

- windfarms impact on bat and bird populations
- hydroelectric development impacting river ecosystems
- solar farms consuming large amounts of good habitat
- production of biomass for the energy sector leading to additional intensification in rural landscapes (loss of high nature value elements, impacts on species rich grassland) as well as in forest ecosystems (increasing forest biomass production through drainage, fertilization and introduction of alien tree species represents areas of conflict).

Conflict between strategies to protect human health and the preservation of biodiversity and of ecosystem fuction[6,7] *(Goals 1,2,8, indicators)*

Parasites, pathogens and decomposers represent key elements of any healthy ecosystem; they shape population dynamics, interspecific competition and appear to be important drivers (and part of) biodiversity. The fear to epizootics and diseases has caused the implementation of management strategies which involve the vision of "aseptic" ecosystems. Examples include systematic rabies vaccination in natural areas, and the Bovine Spongiform Encephalopathy crisis, which has brought deleterious consequences for birds of prey and obligate scavengers in Europe.

References

For a general review on European Conservation issues, please refer to Pullin, A.S. et al. 2009. Conservation focus on Europe: major conservation policy issues that need to be informed by conservation science. Conservation Biology 23: 818–824.

[1] Selva, N., S. Kreft, V. Kati, M. Schluck, B.G. Jonsson, B. Mihok, H. Okarma & P.L. Ibisch. Roadless areas as conservation targets in Europe (ms submitted to *Conservation Biology*).

[2]Gaston, K.J. & R.A. Fuller. 2007. Commonness, population depletion and conservation biology. *Trends in Ecology and Evolution* 23: 14-19.

[3]Cohn, J.P. 2008. How ecofriendly are windfarms? *Bioscience* 58: 576-578.

[4]Curry, A. 2009. Deadly flights. *Science* 325: 386-387.

[5]Tellería, J.L. 2009. Wind power plants and the conservation of birds and bats in Spain: a geographical assessment. *Biodiversity and Conservation* 18: 1781- 1791.

[6]Tella, J.L. 2001. Action is needed now, or BSE crisis could wipe out endangered birds of prey. *Nature* 410:408.

[7]Hudson, P.J., A.P. Dobson & K.D. Lafferty. 2006. Is a healthy ecosystem one that is rich in parasites? *Trends in Ecology and Evolution* 21: 381-385.

Table 1. Ecological benefits of roadless areas. General effects marked in bold (taken from Selva et al., unpublished).

Positive effects
Preservation of native biodiversity
Contain more species and individuals
Contain more endangered, rare and sensitive species, and more species with large spatial requirements
Refuge for native species
Barrier against invasive species
Preservation of intact and functioning ecosystems
Watershed protection
Improvement of ecosystem and human health
Preservation of natural resources (e.g., timber)
Preservation of genetic resources
Maintenance of ecosystem connectivity and integrity
Ensure habitat for viability of populations
Provide migration corridors and stopovers (also for migrant birds and migratory fish)
Preservation of ecological processes, (e.g., dead wood, carrion supply)
Nutrient cycling
Soil formation
Preservation of ecosystem services
Water regulation and supply (quality and quantity)
Erosion control and sediment retention
Air quality
Climate regulation
Disease control (e.g., decrease of Lyme disease risk)
Waste treatment
Biological control (barrier) and high resilience to pest outbreaks
Pollination of crops
High resilience and buffering capacity against climate change
Protection against catastrophic events, like fires, landslides or floods (lower risk and higher resilience)
Enhancement of adaptive capacity of biodiversity
Carbon sequestration and decrease of greenhouse gases effects