

### Title of the symposium:

Toward a landscape-scale management of large carnivores in human-dominated areas

### Detail of organizer(s):

#### Responsible

Name:	Olivia
Surname:	Dondina
Email	olivia.dondina@unimib.it
Organisation/Affiliation:	University of Milano-Bicocca, Department of Earth and Environmental Sciences
Telephone:	+39.02.6448.2918
Country:	Italy
Address:	Piazza della Scienza, 1 - 20126 - Milan

### Co-organizer(s)

#### Co-organizer

Name:	Valerio
Surname:	Orioli
Email:	valerio.orioli@unimib.it
Organisation/Affiliation:	University of Milano-Bicocca, Department of Earth and Environmental Sciences
Address:	Piazza della Scienza, 1 - 20126 - Milan
Country:	Italy

#### Co-organizer

Name:	Alberto
Surname:	Meriggi
Email:	alberto.meriggi@unipv.it
Organisation/Affiliation:	University of Pavia, Department of Earth and Environmental Sciences
Address:	Via Ferrata, 1 - 27100 - Pavia
Country:	Italy

#### Symposium abstract

In the last centuries, global biodiversity has been declining at an unprecedented rate as a result of a complex response to multiple human-induced environmental changes. Specifically, habitat degradation, loss and fragmentation due to land use changes are recognized as some of the most serious threats to the persistence of wildlife populations. Worldwide, the intensity and spread of these phenomena have transformed most of the landscapes into mosaics of human settlements, farmlands and scattered patches of natural habitat. Mainly due to their large home ranges and habitat selection, large carnivores have provided some of the most dramatic examples of the negative effects of fragmentation on the survival of wildlife in multi-use landscapes. The abundance and distribution of large carnivores has been historically reduced, in many cases up to the extinction threshold. Nevertheless, in the last decades, concurrently with the global biodiversity decline, an unexpected large-scale recovery of the previously lost carnivore populations has occurred in some of the most anthropised geographic contexts, such as Europe and North America. The recovery of large carnivores in these areas has been triggered by reintroduction projects and, above all, by natural expansions enhanced mainly by the legal protection of carnivores and by the recovery of their prey populations. Although developing countries may lack some of the institutional and legal tools that have allowed large carnivore recovery in Europe and North America, there are other examples of large carnivore recovering in human-dominated and urbanized landscapes, such as in India and South America. In particular, large carnivores are currently expanding to areas where until a few years ago the scientific community had ruled out that they could return, such as in fragmented landscapes consisting of forest-farmland mosaics or even in heavily exploited agroecosystems. This phenomenon is probably taking place because large carnivores have saturated areas characterized by

optimal habitats and are moving towards much more anthropised contexts, exploiting unexpected ecological corridors. The ability of these species to recolonize novel ecosystems encourages optimism for the conservation of larger and, above all, more connected large carnivore populations. On the other hand, the colonization of highly anthropised areas, where carnivores compete with humans for the remaining semi-natural space and resources, increases opportunities of direct and indirect conflict between humans and predators, making the management of large carnivores in the Anthropocene particularly challenging.

The objective of the symposium is to collect insights deriving from multiple studies focused on the recolonization by large carnivores of human-dominated landscapes, with particular attention to the spatially explicit dynamics governing this phenomenon. Specifically, we aim to link the results of studies concerning the identification of environmental characteristics that facilitate and/or hinder the return of large carnivores in human-dominated contexts, the habitat and food habits of predators in novel ecosystems, comparing them to those observed in areas of historical presence, and the prediction of large carnivore expansion to new areas, which is essential to identifying future hotspots of conflict. Of particular interest are also studies that identify the characteristics of ecological corridors used by large carnivores in human-dominated areas, studies that develop or apply novel methods to identifying these corridors and that address the issue of identification/implementation of ecological networks for large carnivores in the Anthropocene.

The final goal is to provide novel insights to start thinking about how to move towards an effective management of large carnivores in highly populated areas following a landscape-scale approach.

### **How your symposia will improve landscape ecology science?**

One of the major objectives of the landscape ecology is to identify the causes and to propose solutions to contain the biodiversity decline that has affected most of the ecosystems all over the world in the last centuries. Within this context, the landscape-scale conservation of large carnivores plays a key role. Over the last decades it has become increasingly clear that large carnivores are crucial for the maintenance of trophic cascades, structured animal communities and, finally, functional ecosystems. The disproportionate impact on biodiversity conservation and ecosystems functioning makes the effective conservation of large carnivores essential. However, for a proper conservation of these species, it is necessary to develop novel studies focused on large carnivores' spatial dynamics of occurrence at the landscape-scale. In fact, in many geographic contexts, recovering large carnivore populations are recently occupying highly modified and anthropised areas, where their management becomes even more difficult due to the increasing number of situations of direct and indirect conflict with humans. The symposium has the final aim of collecting information regarding the methods and the results of studies that have focused on understanding where, how and why carnivores are moving to

increasingly anthropised areas and how they are able to survive and settle in these new areas. Integrating the results of such studies will lead to obtain more information about how to move towards a correct landscape management of carnivore populations in novel human-dominated ecosystems and, therefore, to an effective conservation of the animal communities and ecosystems depending on large carnivores' survival.

### **Broad thematic areas**

Broad thematic areas 1st choice: Biodiversity conservation

Broad thematic areas 2st choice: Landscape modelling

### **Free Keywords**

Human dominated areas; Large carnivores; Landscape changes; Human-carnivore conflict