POLYTECHNIC OF TORINO
FACULTY OF ARCHITECTURE
Degree in Architecture
Honors theses

Landscape Ecology: role of wildlife corridors
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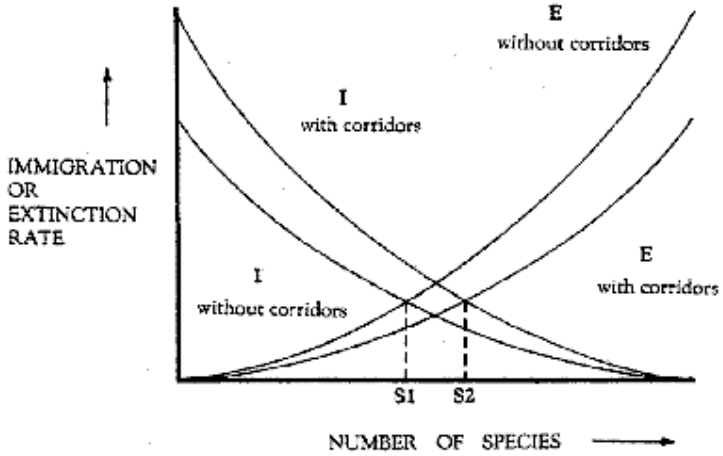
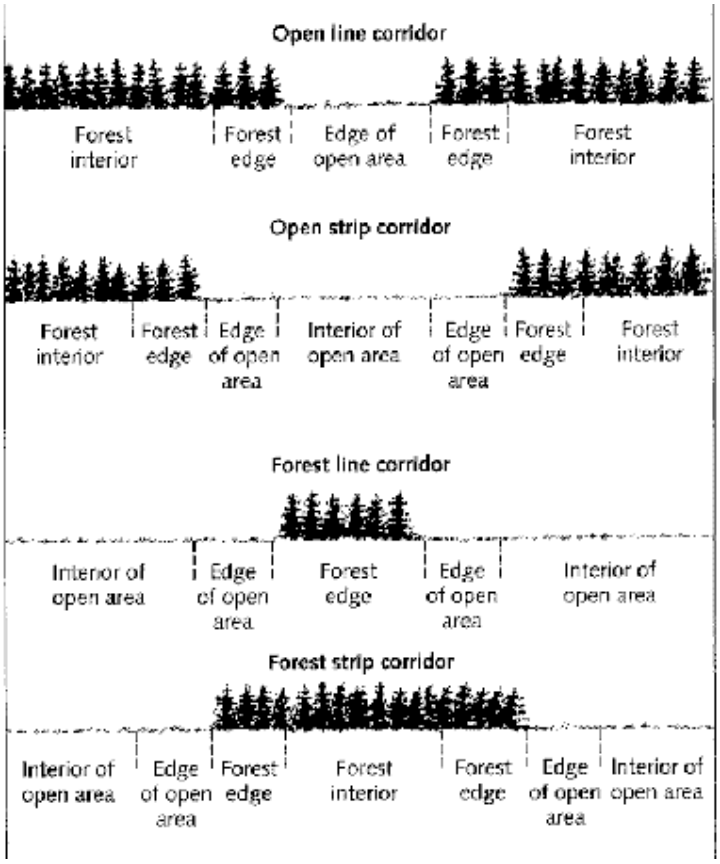
A wildlife corridor is an existing or restored feature of native vegetation; that links two or more patches of natural habitat; that acts as habitat and as conduit for animal and plant movements and that acts as a way that allows genetic exchange between populations. Wildlife corridors positively affect biodiversity in that they function as :

1. Habitat for certain species;
2. Conduit (-allow daily and seasonal animal movements;-allow dispersion movements, genetic flows between populations so that they can prevent small population from local extinction;-allow animal range shiftings due to climate changes);
3. Filter or Barrier;
4. Source: because of their biotic effects on the surrounding matrix.



Those functions (movement, dispersion and genetic flow between patches) allow populations to move towards such environments that otherwise could not be reached. Corridor use depends on behavioural aspects; it is also affected by environmental structure, vegetation type and covering degree. Wildlife corridors allow individual movements between populations that otherwise would remain isolated, supporting their survival in two ways :

- - reducing isolated populations vulnerability to extinction due to environmental disease, demographic fluctuations or genetic deterioration;
- - acting as a dispersion path for individual animals between patches, producing an opportunity for recolonization so that possible local extinction can be avoided.



The effectiveness of the corridor in achieving those functions, also depends on its structure (length, width, shape, habitat type and quality) and also if there are no optimal standards given for the corridor project since they are specie-specific, some useful guidelines can be given as follows. Length : mortality rates inside the corridor must be evaluated for each species.

If the corridor is not very wide (1,5 Km.), commonly it's better to avoid long tracts without larger patches dislocated at suitable distance for each species that use the corridor.

Width : a narrow corridor contracts movements and addresses faster the individuals to the end, but this save in time is negatively balanced by a higher mortality rate due to the higher rate of edge area(with a high level of mortality) of narrow corridors. On the other hand a corridor that is too wide, may increase the time spent traveling along it, because the individuals spend time wandering from one side to the other of the corridor. The ideal width for a certain species depends on the structure and quality of the habitat inside the corridor and of the matrix; on the adjacent land use and on the behaviour of the species that use the corridor. Commonly the optimal width is a function of the corridor capacity rate and of the average distance traveled in a unit of time for one individual. Shape : the most common shapes are the rectangular and funnel shaped corridors. A simulation shows that the funnel shape is absolutely negative for wildlife movements because the individuals that enter the corridor and move along the edge, are obliged to frequently change directions. An interrupted shape greatly reduces the corridor capacity, it seems that every break or narrowing slows down movements and reduces the rate of success.

Type of habitat and quality : a successful wildlife corridor has to contain sets of different habitats. The type of habitats and quality can not be uniform along the corridor, usually they have a patchy distribution. Several high quality features inside the corridor act as rest areas for migrants and if carefully planned, can increase the effective length of the corridor.