

# **Design of multifunctional landscape corridors using effective mesh-size for regional targeting of urban development restrictions and open space development**

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landscape fragmentation, landscape corridors, bio-connectivity, effective mesh-size, strategic territorial development planning (muss hierher laut abstract-Vorgabe)

## **Abstract**

One of the fundamental consequences of urbanisation can be found in the loss of permeability of open space due to the development of settlement networks and urban growth. Ecological (e.g. bio-connectivity, remoteness, air exchange and uncontaminated soils and water) as well as other landscape qualities and services like suitability for recreation, cultural and agricultural functions or visual integrity, are affected by the landscape being dissected with roads, settlements and other infrastructure facilities. 'Effective mesh-size' (Jaeger 2000) is widely used as an indicator of open space being permeable for animal and recreational movement but also for the other aspects mentioned. Using 'effective mesh-size' areas with low density and impact of urban and transportation infrastructure can be identified (Esswein et al. 2002) and underlay strategic territorial planning (Schwarz-v.Raumer, 2002; Girvetz, 2008) and environmental monitoring (Jaeger et al., 2007; Jaeger et al., 2008). Our contribution suggests a GIS-technique which leads to landscape corridors of low degree of dissection. They connect extraordinary big meshes in the settlement network using the most permeable corridor region. The technique is based on a moving window analysis for 'effective mesh-size' and due to this it identifies the multifunctional aspects of landscape described

above. The result of the procedure is analysed considering its coincidence with existing delineations of wildlife and biotope corridors and is discussed with regard to its meaning and use in regional and state level strategic development planning (Stuttgart Region and state of Baden-Württemberg).

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