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# *Biodiversité temporaire en ville : que propose la recherche?*

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# Conservation temporaire de la biodiversité urbaine et construction temporaire

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Quelle est la meilleure façon de favoriser la  
biodiversité urbaine dans une zone industrielle  
composée de parcelles construites et de  
parcelles en friche?

→ plantes et insectes



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Temporary conservation for urban biodiversity

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**ABSTRACT**

Urban habitats, particularly wastelands and brownfields, maintain rich biodiversity and offer habitats for many species, even rare and endangered taxa. However, such habitats are also under socio-economic pressures due to redevelopment for housing and industrial uses. In order to maintain urban biodiversity, it is currently unclear how much open area must be preserved and whether conservation is possible without complete exclusion from economic development. In this study, we applied a simulation model based on species distribution models for plants, grasshoppers, and butterflies to investigate planning options for urban conservation with special focus on business areas. Altogether, we modelled the occurrence of 11 species of the urban species pool and analyzed settings of different proportions of open sites, different habitat turnover times, and different lot sizes. Our simulations demonstrated that dynamic land use supports urban biodiversity in terms of species richness and rarity. Setting aside brownfields before redevelopment for a period of on average 15 years supported the highest conservation value. Consequently, we recommend integrating the concept of ‘temporary conservation’ into urban planning for industrial and business areas. This concept requires habitat to be destroyed by redeveloping brownfield sites to build-up sites, but simultaneously creating new open spaces due to abandonment of urban land uses at other locations. This maintains a spatio-temporal mosaic of different successional stages ranging from pioneer to post-fire conditions.

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**1. Introduction**

In general, cities possess a rich biodiversity of flora and fauna (Gratford and Kremen, 2007; Fickett et al., 2001; Rebele, 1994), which is distributed over various types of open space, including maintained parks and gardens, as well as informal habitats such as ruderal and derelict sites (Van and Niemelä, 2004). These landscapes form a complex spatio-temporal mosaic of different habitat types, characterized by varied and altered climatic conditions and water and nutrient fluxes (Wilby and Perry, 2006). Consequently, these areas comprise unique urban communities (Alberti et al., 2003).

Among the most valuable urban habitats are brownfield sites, composed of derelict land, abandoned railway tracks, landfills, and previously developed sites. These sites often support a rich flora and fauna that include rare species (Eyre et al., 2003; Maurer et al., 2000; Small et al., 2005). They offer heterogeneous habitats of different successional stages, which are ephemeral, mostly undisturbed, and unmanaged. Despite their ecological value, brownfields are often ignored in urban conservation planning (Harrison and Davies, 2002; Murat et al., 2007) and receive much less attention by urban ecologists than parks and gardens (e.g. Smith et al., 2006a,b). Moreover, a current paradigm of urban planning indicates that brownfield sites should be a priority over greenfield sites (i.e. sites outside cities) for new housing and industry development (DLG, 2000; Pasolt et al., 2005). While this paradigm is certainly useful to restrict urban sprawl, it is in conflict with any goal to preserve urban biodiversity.

This study introduces the concept of temporary biodiversity and temporary building and assesses its efficacy. As a new management tool, this concept allows for both an urban renaissance and biodiversity conservation on brownfield sites. This approach views the urban habitat as a spatio-temporal mosaic of developed and abandoned sites, with recolonization of brownfields by plants and animals from adjacent habitats and future redevelopment of brownfields for housing or industry. Currently, little is known regarding turnover rates from developed to brownfield to developed sites. However, evidence suggests that the duration of use of industrial buildings has declined in recent years and will continue in the future due to short-term, fast-moving markets and new economic trends (Hansler and Koller, 2004).

From a species point of view, brownfield emergence and loss result in spatially unstable habitat conditions for plants and

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## REPONSE

- permettre un roulement dans le temps et dans l'espace entre parcelles construites et parcelles en friche grâce à une dynamique régulière d'opérations de construction et de déconstruction -> durée de vie du bâtiment : environ 20 ans: -> **construction temporaire** ;
- que la zone industrielle soit composée de 50 à 60% de friches vieilles en moyennes de 15 ans ; -> **conservation temporaire de la biodiversité** ;
- de préférer une mosaïque de nombreuses friches de taille réduites que quelques très grandes friches ;
- de planifier la conservation de la biodiversité urbaine à l'échelle du territoire et non pas à l'échelle d'une seule opération d'aménagement.





REMARQUES : pour que ce modèle fonctionne il faut :

- Accepter de changer le modèle de construction pour le bâti industriel → quid de la durée de vie du logement?
- Une durée de vie d'un bâtiment +courte → quid des déchets?
- Que la parcelle déconstruite soit effectivement dédiée à la biodiversité avec possibilité de quelques équipements de loisirs à la marge pour les promeneurs → mesure de compensation?
- Qu'il y ait une certaine perméabilité entre les parcelles ;
- Accepter un modèle de zone industrielle plus étendue → quid de l'étalement urbain?



# Merci !



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