

Cities and Wilderness

A New Perspective

BY INGO KOWARIK

Introduction

Urbanization conflicts with biodiversity conservation as many cities are located close to biodiversity hotspots (Cincotta et al. 2000). The traditional view of conservationists on cities is predominantly negative and might be summarized by the phrase “cities destroy nature.” This inevitably happens when parts of historical landscapes are replaced by built urban structures. In addition, the ecological footprint of cities affects ecosystems indirectly from regional to global scales (Grimm 2008). Yet landscape transformation in the wake of urbanization can also result in novel habitats within the urban fabric. These often differ fundamentally from historical patterns but may nevertheless harbor surprisingly high numbers of plant and animal species (Kowarik 2011; Werner 2011).

Rethinking the relationship between cities and nature is a pivotal challenge for nature conservation in the “Urban Millennium” and also for the future of wilderness. More than half of the world’s population now lives in urban areas, and this proportion will grow steadily (United Nations 2012). Consequently, more and more people risk being increasingly disconnected from traditional wilderness areas. The resulting “extinction of experience” (Miller 2005) will certainly affect attitudes toward nature in general, including the willingness to support conservation approaches beyond cities (Miller 2005; Dunn et al. 2006). Enhancing wilderness areas *inside* urban regions would thus facilitate, as an important side effect, commitment to wilderness conservation *outside* cities. A further argument emerges from health studies: there is growing evidence that access to nature within urban regions positively affects human health and well-being, although causal relationships are difficult to determine (Fuller et al. 2007; Lee and Maheswaran 2011).

Although there is increasing support for green spaces in cities in general, relating wilderness issues to urban environments often evokes controversy. How does this relate to the perception of cities as the antithesis of wilderness? Terms such as *wilderness*, *wildness*, or *naturalness* have been

traditionally related to pristine landscapes with minimal human interventions – and such terms are ambiguous, often value loaded, and are inconsistently used (Ridder 2007). This article illustrates a conceptual approach to linking wilderness ideas with urban environments and uses examples from Berlin to demonstrate how different kinds of wild nature can be included in urban development.



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The Four Natures Approach

Early European concepts have demonstrated that naturalness can be defined quite differently but follow one of two perspectives (Kowarik 1999): (1) by a reference to historical benchmarks (pristine landscapes virtually untouched by humans) or (2) relying on a high level of self-organization of ecosystems that may be achieved even after human-mediated, nonreversible shifts in environmental conditions. Accepting self-organization of ecosystems as a way to define naturalness allows addressing novel ecosystems that emerge in urban space as natural even though they usually diverge profoundly from pristine landscapes in species assemblages and site conditions. Although the conceptual differences between the two perspectives of naturalness are clear, they are difficult to communicate to a broader public, and barriers to acceptance remain. Many conservationists rely on historical benchmarks for defining naturalness as well as wilderness – and this likely reflects a higher valuation of historical ecosystems. There are good reasons for doing so: historical ecosystems usually harbor more rare and endangered species than urban habitats. Despite being different, however, urban ecosystems may achieve a high level of self-organization and thus provide chances for

urban people to experience natural processes in their own neighborhoods. Therefore, the urban challenge is to enhance wild nature within the frame of urban land uses despite remaining differences between urban and nonurban ecosystems – and ambiguous terminologies.

The “Four Natures approach” has been promoted since the 1990s (Kowarik 2005) as a conceptual framework in which to structure and communicate the variety of green spaces within urban borders without an implicit connotation of values that often are inherent in wilderness terminologies. Using the word nature as an overarching term signals openness toward all manifestations of natural elements and processes on urban land, and this approach addresses four kinds of nature. These four kinds differ fundamentally in terms of landscape legacies, human interventions, and environmental characteristics, but are not more or less valuable per se in an urban context. All of them rely on natural elements and processes that are accessible to city dwellers.

1. Nature of the first kind encompasses remnants of pristine ecosystems such as old-growth forests or wetlands that often exist at the urban fringe or have been incorporated in the urban matrix (see Figure 1).
2. Nature of the second kind represents rural cultural landscapes that result from the transformation of pristine landscapes by human land uses such as agriculture. Fields, hedges, and grasslands are prominent examples that are often to be found in the urban periphery.
3. Nature of the third kind covers urban green spaces such as gardens, parks, or graveyards that

have been generated, and are maintained, by deliberate horticultural interventions, either by transforming existing habitats or establishing new green spaces after habitat destruction.

4. Nature of the fourth kind, finally, emerges spontaneously as a novel urban green space on vacant lots or other urban-industrial sites despite severe habitat transformations. It may be shaped accidentally by human agency but may also develop towards wild urban woodlands.

Traditional Wilderness and Novel Wildness on Urban Grounds

The four types of nature can be addressed as a series of transformation stages of pristine landscapes. Whereas remnants of nature of the first kind clearly correspond to the traditional idea of wilderness, habitats comprising the fourth kind represent the greatest distance from historical benchmarks in terms of soils, hydrology, or species assemblages.

High numbers of nonnative plant species often prevail on urban wasteland and may constitute novel types of urban woodlands (Kowarik 2005). These may demonstrate a high level of self-regulation in terms of soil formation, species immigration and extinction, and biotic interactions and, thus, evolve toward a novel type of wildness. Areas of both traditional wilderness and novel wildness show a functioning of ecosystems without deliberate human interventions. This correspondence opens a perspective for linking wilderness ideas with specific urban-industrial sites despite remaining land-use legacies.

Take the Südgelände in Berlin as an example (Kowarik and Langer 2005). Parts of this former railway yard had been abandoned for around 60 years (see Figures 2 and 3). During this period, hundreds of plant species had colonized bare ground on tracks and adjacent areas. Pioneer species had been replaced by perennial grasses and herbs, and the establishment of trees finally led to the rise of woodlands in many parts of the area. Thus



Figure 1 – Remnants of pristine forests on Berlin’s outskirts. Photo by Ingo Kowarik.

far, either native trees (birch or poplar species) or alien trees dominate the pioneer forests. Most notably among the latter is the North American black locust (*Robinia pseudoacacia*). Due to the limited life span of the woody pioneers, decay and regeneration within the stands proceed and illustrate conspicuously the functioning of natural processes. These novel forests are unlikely to converge toward historical species assemblages.

Enhancing Wildness within Berlin's Four Natures

Berlin is widely regarded as a key setting for the science of urban ecology and attempts to integrate urban nature into the urban fabric (Lachmund 2013). Today, about half of Berlin's surface consists of built-up areas, 20% is covered by forests, green spaces make up 10%, rivers and lakes 6%, and agricultural land 7%. Using the Four Natures framework allows us to illustrate different strategies on how wildness can be enhanced in cities, aiming both at conservation goals and better access for urban residents to natural processes.



Figure 2 – Like the Südgelände railway, the former Nordbahnhof railway station in central Berlin shows how novel forests develop at the borders while intermediate succession stages are maintained in the central area. Photo by Ingo Kowarik.

Nature of the first kind: Prevailing strategies are conservation and restoration. Most remnants of old-growth forests and wetlands are currently legally protected as nature reserves and, except for some vulnerable marshes, mostly accessible to the public. Restoration efforts mainly target wetlands and riverine habitats that have been adversely affected by lowering of groundwater or water pollution. Measures aim, for example, at improving hydrological conditions or restoring reed communities along rivers. Recently, beavers have recolonized major parts of Berlin's river system. Beyond conservation areas, 10% of silviculturally managed forests have been committed to natural development as part of a certification process.

Nature of the second kind: Most remnants of the rural cultural landscapes within Berlin are legally protected. Moreover, maintaining management is crucial because almost all grasslands in central Europe depend on agricultural uses such as hayfields or grazing lands. A maximum level of wildness is prevented here, but margins for enhancing biodiversity

within the second nature clearly exist. Farmers are supported to achieve a biodiversity-oriented grassland management. Alternatively, maintenance of grasslands is realized directly under the supervision of nature conservation authorities. Several remnants of pasture woodland are maintained by silvicultural practices.

Nature of the third kind: Although being designed and shaped by maintenance and recreational uses, parks, gardens, and other urban green spaces can be hotspots of urban biodiversity. In particular, historical landscape parks harbor species-rich grasslands and an array of rare animal species that are associated with old and decaying trees, including bats, woodpeckers, or insects associated with rotten wood. Some of these parks are conserved both as garden monuments and nature conservation areas. Strategies here attempt to optimize a biodiversity-friendly management in collaboration with various stakeholders. Wilderness, in contrast to culture, has often been part of historical design concepts and implies chances to enhance natural processes in parks – such as accepting the decay of old trees or allowing some wild vegetation in different vegetation layers – even from a cultural heritage perspective. As one of the goals of Berlin's recent biodiversity strategy, a biodiversity-friendly maintenance of all types of urban green spaces is expected to increase.

Nature of the fourth kind: Since the development of Berlin was slow after World War II, the recovery of nature on demolished or abandoned areas was more widespread than in most other cities. Wastelands were transformed into novel spaces of nature dominated by different stages of natural succession up to urban woodland (see Figures 2 and 3). Emerging Fourth Nature is often

tolerated along transportation corridors or within built-up areas. Since the 1980s, some novel green areas have been integrated formally into Berlin's green infrastructure. The characteristic Berlin approach was, and remains, to accept generally novel types of urban nature even when dominated by nonnative species – a contemporary urban rebuke to nativist conceptions of landscape. In addition to a formal protection status as park or conservation area, several approaches to handle Fourth Nature have been adopted, or combined, as was achieved in the Südgelände (Kowarik and Langer 2005):

- On a defined area, woodland is allowed to develop without human intervention, resulting in ecosystem functioning and independent losses or gains in animal or plant species.
- In other parts of the area, intermediate stages of succession are maintained by mowing or grazing because of aesthetic reasons and the habitat functions provided for rare and endangered species of plants and animals.
- A system of paths, mostly following ancient tracks, and other infrastructure elements such as benches have been established to enhance access of visitors.
- Works of art have been installed within the wild vegetation to signal at a symbolic level that “lost” wastelands have been transformed into novel green spaces (see Figure 4).
- While access to most areas is unregulated, a runway leads visitors through more sensitive biotopes such as woods and open grasslands in the core area.

While “pure” Fourth Nature is maintained in some areas of Berlin,



Figure 3 – Decay and regeneration processes in novel urban woodland, Südgelände, Berlin. Photo by Ingo Kowarik.

human intervention, or the adding of new horticultural-shaped landscapes in other areas, leads to hybrids between Fourth Nature and Third Nature. Such combined approaches foster public access and associated nature experiences for many residents. They also contribute to a broader acceptance of wild urban nature. Studies from environmental psychology indicate that traces of human interference such as paths, benches, or mowing parts of vegetation, which provide physical and visual access,

enhance the acceptance of wildness (Jorgensen et al. 2007; Hofmann et al. 2012). Access to wild nature through cultural interventions seems paradoxical yet has helped to gain its acceptance. Berlin illustrates many possibilities for the enhancement of wild nature in urban space. These approaches to wild nature might not only strengthen links between nature and urban residents but also have a positive impact on the pursuit of conservation beyond cities.



Figure 4 – Works of art symbolize a shift of values in novel urban green. Photo by Ingo Kowarik.

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Continued from GROWING HUMAN FOOTPRINT ... IN ANTARCTICA, page 13

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