
Introductory Keynote Urbio 2008

Cities and the Convention on Biological Diversity – from Rio via Curitiba to Erfurt – facing the main challenges of this century for life on earth

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Cities and the Convention on Biological Diversity (CBD)
- from Rio via Curitiba to Erfurt –
  facing the main challenges of this century for life on earth

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1 General basis of the conference Urbio 2008

1.1 Definition urban biodiversity

Urban biodiversity is the variety and richness of living things, including genetic, species and habitat diversity found in and around towns, cities and other currently or previously developed areas.

Yokohama

Tokyo
1 General basis of the conference Urbio 2008

1.2 Main challenges for life on earth

• Urban population growth

The future is largely urban

• By 2030, there will be 5 billion people living in urban areas (61% of the estimated world population of 8.2 billion).

Figure from Hambleton 2006
1 General basis of the conference Urbio 2008

1.2 Main challenges for life on earth

- Urban population growth
- Climate change
1 General basis of the conference Urbio 2008

1.2 Main challenges for life on earth

- Urban population growth
- Climate change
- Loss of biodiversity
1 General basis of the conference Urbio 2008

1.2 Main challenges for life on earth - urban ecological footprint

In 2007 urban dwellers (=50% of the world population)

...are using
- 2% of the earth surface
- 75% of global resources

...are producing
- 80% of the global CO₂

...are responsible for
- a major loss of biodiversity

In 2030 urban dwellers (= 61% of the world population)

...will use:
- 3.5% of the earth surface
- ?% of global resources

...will produce
- ?% of the global CO₂

...will cause
- ? loss of biodiversity?
1 General basis of the conference Urbio 2008

1.2 Main challenges for life on earth

Hot spots of global biodiversity and largest urban agglomerations 2015

2 The way from Rio via Curitiba to Erfurt

2.1 Rio de Janeiro 1992 & further UN meetings urban biodiversity

Convention on Biological Diversity founded

Aims of the CBD

• **the conservation of biological diversity**
  (= maintaining earth's life support systems and maintaining future options for human development)

• **the sustainable use of its components**
  (= providing livelihoods to people, without jeopardising future options)

• **the fair and equitable sharing of the benefits arising from the use of genetic resources**

Ref.: United Nations 1992
2. The way from Rio via Curitiba to Erfurt

2.1 Rio 1992 de Janeiro & further UN meetings urban biodiversity

• 1996 Istanbul - HABITAT II - UN Conference on Human Settlements (UNCHS)

• 2001 New York – Istanbul + 5 – UN Conference on sustainable development of urban areas

• **COP 6 - The Hague 2002** - suggestion to focus during COP 9 the issue “Biodiversity of urban & suburban areas”

• **COP 7 - Kuala Lumpur 2004** “Biodiversity of urban & suburban areas” was postponed until further notice

Ref.: Müller & Abendroth 2007
2. The way from Rio via Curitiba to Erfurt

2.2 Curitiba 2007 and the CBD initiative “Cities and Biodiversity”

26. - 28. March 2007 Curitiba, Brazil – “Mayors meeting on the contribution of cities to the achievement of the 2010 biodiversity target”

• „The battle for life on earth will be won or lost in cities“
  Dr. Ahmed Djoglaf (Executive Secretary CBD)

• „Cities are not the problem, they are the solution“
  Dr. Jaime Lerner (former Mayor of Curitiba)
2. The CBD and the way from Rio via Curitiba to Erfurt

2.3 Erfurt 2008 and the CONTUREC initiative “Urban Biodiversity”


2. The CBD and the way from Rio via Curitiba to Erfurt

2.3 Erfurt 2008 and the CONTUREC initiative “Urban Biodiversity”


3. Conference of the COmpetence NeTwork URban ECology

Ref.: www.urbio2008.com
3. Characteristics of urban ecosystems

3.1 Alterations of local climate, soils, water and biodiversity

→ Is the focus of urban ecology – looking backward – to more than 50 years history

Effects of urbanization on local climate, soils, water & biodiversity (from Sukopp 1973)

3. Characteristics of urban ecosystems

3.2 Alterations of biodiversity within the urban – rural gradient

Ref.: e.g. McDonnell & al. 1997, McKinney 2008 (summarisation of 105 studies)

Percentage of studies, by group, showing species richness peaks at three levels of urbanization (from McKinney 2008, altered Müller 2008)

- **Urban core** (down town)
- **Urban fringe** (suburbs)
- **Urban hinterland** (forests, rural areas)
3. Characteristics of urban ecosystems

3.3 Centres of immigration and adaptation

The pigeon (*Columba livea*), a typical bird of rocks and cliffs, has meanwhile its main habitat in cities (*Columba livea forma domestica*)

(Fig. from Larson 2004)

Ref.: e.g. Kowarik & Starfinger 2002, McKinney 2002

The frontispiece of Simms (1979) emphasizing the homology between the natural and built environments that support pigeons. Original artwork: Peter Knock. Used with permission. (from Larson 2004)
3. Characteristics of urban ecosystems

3.4 Centres of importation of non-native species

Example horticulture and ornamental plants

Imperial garden (China)  Erfurt: a centre of horticulture since more than 200 years

Ref.: e.g. Martin & Stabler 2004, Krausch 2005
3. Characteristics of urban ecosystems

3.5 Centres of importation & naturalization of non native species

Example English sparrows

were imported to American cities in the 1850s - 20 years later they were “invasive” (Garber 1987)

Correspondence between human population growth and naturalized plants in Berlin (Sukopp & Wurzel 2003)

3. Characteristics of urban ecosystems

3.6 Centres of exportation of non native species

Examples:

Tree of Heaven (*Ailanthus altissima*) &
Black Locust (*Robinia pseudoacacia*)

Invasive species in the Northern Hemisphere

Water hyacinth (*Eichhornia crassipes*)
„World Worst Weed“ in tropical regions

“Biological invasions”

→ global biotic homogenisation,
→ loss of global biodiversity

3. Characteristics of urban ecosystems

3.7 Centers of evolution

**New taxa** are appearing in urban areas adapted to the special ecological conditions in urban habitats

**New interactions** (biocenoses) develop between animals and plants

Ref.: e.g. Johnston & Selander 1964, Wittig 2004, Keil & Loos 2005
3. Characteristics of urban ecosystems

3.7 Centers of evolution

Urbanisation creates new habitats e.g. residential areas and gardens, parks, railway areas, brownfields.............

Ref.: e.g. Gilbert 1989; Clergeau & al. 1998; Niemelä 1999; Wittig 2002; Berkowitz, Nilon, & Hollweg 2003

- Gardens, South Africa

- Central Park, New York

- Urban front gardens Erfurt

- Old brownfield, Schöneberber Südgelände / Berlin

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3. Characteristics of urban ecosystems

3.8 Complex hotspots & melting pots for regional biodiversity

On a larger scale urbanisation can promote increasing levels of biodiversity example: vascular plants

Ref.: e.g. Kühn & al. 2004, Pysek 1989, Clemants & Moore 2003
4. The importance of urban biodiversity

4.1 Is distinctive

Cities predominant ecosystem for humans (*Homo sapiens*) and numerous other species and habitats - examples

- Pigeons (*Columba livea*) common worldwide
- Black redstart (*Phoenicurus ochruros*) breeds in Britain *only on buildings*
- Old brownfields: unique species combination (railway area Schöneberger Südgelände, Berlin)

© from Larson 2004
4. The importance of urban biodiversity

4.2 Reflecting human culture

Example:

Historical landscape gardens in Europe

Coexistence of human culture & biodiversity is possible

UNESCO world heritage “Park an der Ilm” Weimar
4. The importance of urban biodiversity

4.3 Contributing to the quality of life in an increasing global society

Beer garden (Munich)

© F. Geller-Grimm

→Topic 4 Urban biodiversity and climate change
4. The importance of urban biodiversity

4.4 The only biodiversity that many people experience

- Brownfield, Erfurt
- Allotment gardens, Erfurt
- Central Park New York
- "Ecocycles" (South Africa)
4. The importance of urban biodiversity

4.5 Key for conservation of global biodiversity

the so called “Pigeon Paradox” (Dunn & al. 2006)
4. The importance of urban biodiversity

4.5 Key for conservation of global biodiversity

- Most ecosystems and species will not be saved in cities but

- People are more likely to take conservation action when they have direct experience with natural world.

- As human populations shift to cities, people will increasingly experience nature through contact with urban biodiversity.

- The urban jungle, with its many non-native species, may well be the breeding ground for future environmental action.

- Therefore urban biodiversity will be the key for conservation of global biodiversity!

5. Challenges for the future of biodiversity

- Halting the global loss of biodiversity and ensuring all our cities are green pleasant and prosperous places.....

→ Topic 5 - Design & future of urban biodiversity

→ Erfurt Declaration Urbio 2008
5. Challenges for the future of biodiversity

5.1 Raising greater public awareness of urban biodiversity

Example from Erfurt

Competition “Biodiversity of urban front gardens” in Erfurt 2007

award of the champion ...

…..and press reaction
5. Challenges for the future of biodiversity

5.2 Integration of biodiversity into urban development

5. Challenges for the future of biodiversity

5.2 Integration of biodiversity into urban development

Cities in Germany with an evaluation of urban biodiversity - So called “urban biotope mapping” -

→ Erfurt Declaration Urbio 2008
5. Challenges for the future of biodiversity

5.3 Linking urban ecology with urban design

Ecological Design –
making it mainstream for urban designers

Bavarian Agency for Environment, Augsburg

Landscape education park FHE, Erfurt

→ Erfurt Declaration Urbio 2008
5. Challenges for the future of biodiversity

5.4 Fostering research & education into urban biodiversity & design


http://www.tcpa.org.uk/downloads/TCP_A_biodiversity_guide_lowres.pdf

→ Erfurt Declaration Urbio 2008
5. Challenges for the future of biodiversity

5.5 Establishing a new cross cutting issue “Cities & Biodiversity” within the CBD

As a community of urban biodiversity professionals we shall support this by

→ share our knowledge and commitment through this conference & in future

→ establish a global network for urban biodiversity “Urbio”

→ promote urban biodiversity through continuing dialogue with the CBD – COP meetings in connection with “Urbio” meetings

→ issue an Erfurt Declaration Urbio 2008 to support the CBD Initiative “Cities and Biodiversity” and as a message for COP 9 in Bonn

→ Erfurt Declaration Urbio 2008
Thank you!

Norbert Müller, David Knight & Peter Werner

The Organizers Urbio 2008
„Urban Biodiversity & Design - Erfurt 2008“

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