Speaker

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New Maps Show How Urban Sprawl Threatens the World’s Remaining Biodiversity

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Going, going, gone?

Urbanisation
City development is by far the biggest threat to biodiversity. It not only destroys habitats, but also causes fragmentation when small pieces of veld remain between built areas. These habitat fragments are prone to invasion by alien plants.

Invasive plants
Invasive alien plants take over our indigenous vegetation. They also change important processes such as nutrient cycling, fire and water runoff.

Agriculture
Farming has a massive impact on biodiversity, not just because habitat is lost when land is cleared. Negative impacts often continue due to fertiliser runoff, altered drainage systems, and weeds and grasses which invade surrounding natural areas.

Fire
Fire is natural and necessary for our vegetation. However, in urban areas the veld burns too frequently, or not often enough.

Cape Town has the highest extinction rate in the world.
But all is not lost. You can help.
What is biodiversity?

• Species that occur in region
• Habitats that support those species
• Processes that maintain those habitats
What is urban biodiversity?

• Occurs at different scales
  – Lot / parcel
  – Neighborhood
  – City
  – Region
• Occurs in parks and protected areas
• Occurs in the matrix of green spaces other than parks and protected areas
What is urban biodiversity?

- Occurs in a socioeconomic context (Cilliers 2010)
- Occurs in a cultural context (Millard 2010)
- Shaped by planning, design, and management (Ignatieva 2010)
What do we know about urban biodiversity?

City-wide species lists for plants and birds from 147 cities around the world. (Aronson et al. 2014)
A lot of species of plants and birds occur in cities!
BEST PREDICTOR OF NUMBER OF SPECIES

Spatial extent of city
Amount of green space
What we know about urban biodiversity?

Cities act like a filter on a regional pool of species.
Conservation and management matter.
Managing green spaces for biodiversity

Aronson et al. 2017
What role do urban green spaces play in conserving urban biodiversity?

Grindstone Nature Area, Columbia, MO

Grassland birds
Grassland and shrubland birds

• Part of regional species pool
  – Habitat loss
  – Loss of fire and grazing
  – City
  – Region
• Opportunity to manage in urban parks
Grassland and shrubland birds

- Nest survival in urban parks (Burhans and Thompson 2006)
- Manage vegetation height and plant species composition
  - Reduce mowing
  - Maintain mowing
  - Work with adjacent residents to manage matrix
What about biodiversity in the matrix: everyday nature?

- Yards, vacant lots, campuses, office parks, small parks
- ½ mile from where people live and work (Kaplan and Kaplan)
  - Where residents encounter nature
  - Where residents value nature
  - Where they make decisions about nature
People and everyday nature: environmental justice issues

- Socioeconomic differences associated with everyday nature
- Baltimore, MD
  - Level of education
  - % Black residents
  - % Families on public assistance
  - Length of time in neighborhood
Biodiversity, everyday nature, and environmental justice: birds and vacant lots

Baltimore, MD (Rega-Brodsky et al. 2018)
Differences in Vacant Lots among Baltimore Neighborhoods

Black, low socioeconomic status:
- Fewer trees
- Smaller trees
- More artificial ground cover

Higher socioeconomic status:
- More, larger trees
- More grass
- Less artificial ground cover
Birds, vacant lots, environmental justice

- 60 bird species
- 64 tree species, 47 shrub species
- Differences
  - Vegetation on lots
  - Tree canopy cover surrounding lots
  - Bird species observed
  - Nesting species
- More shrubs = better success
The ideal lot for robins, mourning doves, cardinals and other shrub-nesting species
The challenge: how to link what people value with opportunities for managing urban biodiversity
How to link what people value with opportunities for managing urban biodiversity

- Species are filtered in cities
- Conserving biodiversity means managing a variety of green spaces
- People and what they see and experience matter
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