Urbanization impact on Biotope in Shanghai: a comparative study between Huangpu District and Pujin Block

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Urbanization impact on Biotope in Shanghai:
A Comparative Study between Huangpu District and Pujin Block

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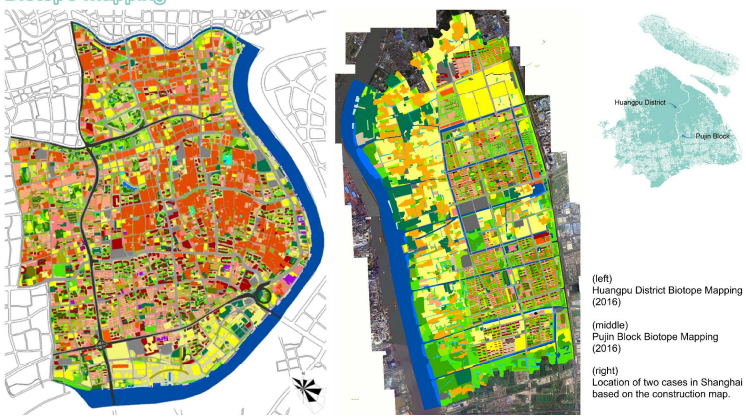
Introduction

Biotopes reveal a crucial role in the urban ecology, as they positively create habitat for the biodiversity development. This study in the city of Shanghai sets the framework for a study of the relation between spatial morphology and urban biotope, aims to discuss the impact of urbanization on the urban biotope. Huangpu District is a highly urbanised area, while Pujin Block is a less urbanised area. By comparing these two cases, we can see the urbanisation impact on biotope in Shanghai.

Research method

- Biotope mapping criteria: adopted from Model for Biotope Mapping in Populated Areas of Germany
- Biotope mapping software: ArcGIS
- Result analysis: SPSS

Biotope mapping



(left)
Huangpu District Biotope Mapping (2016)

(middle)
Pujin Block Biotope Mapping (2016)

(right)
Location of two cases in Shanghai based on the construction map.

Assessment indicators

- **Biotope area (A)**
- **Biotope density (D)**
- **Biotope shape index (BSI)**
- **Biotope diversity index (SDI)**
- **Biotope fragmentation index (BFI)**
- **Biotope value index (BVI)**

Analysis result

- **Biotope area (A)**

At Huangpu district, as a result of the urbanisation, residential-related biotopes occupy most of the space. While at Pujin Block, nature-related biotopes still dominate but facing threats.

- **Biotope density (D)**

Both of the cases have a high density of residential biotopes, but at Pujin Block the farmland and gree biotops also have a high density comparing to other biotopes in this block.

- **Biotope shape index (BSI)**

BSI is used to assess the shape complexity of biotopes. The green space at Pujin Block has a much higher BSI (163.9) than the other case (82.5). The higher the complexity, the stronger the anti-interference ability.

- **Biotope diversity index (SDI)**

The SDI at Huangpu District is 1.86, suprisingly higher than the result at Pujin Block (0.66). This result is due to the larger amount of inported species in the high-urbanisation area.

- **Biotope fragmentation index (BFI)**

BFI at Pujin Block (0.330) is higher than at Huangpu District (0.270), which shows less impact from urbanization. But compared with natural habitat fragmentation degree but still have a large gap.

- **Biotope value index (BVI)**

The Biotope value index is compared with spatial distribution of different biotopes, it is used for identifying focus area to optimise urban biodiversity. Due to the limit content of poster, this result will not be shown. For more information, please contact the auther.

Conclusion

The urbanisation in Shanghai has a strong impact on the biotopes. Nature biotopes are shrinking and tranformed into man-made biotopes. Together with the urbanisation, the biotopes become less complex and valuable, but more fragile. However, due to the imported species, urbanisation surprisingly brings higher biodiversity to the city, which can be potential danger of alien species invasion.