

Defects and Disorders of Urban Park Trees in Hong Kong

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Background

In Hong Kong, many accidents are caused by the structural defects of trees. In the past decade, falling branches have caused the death of five Hong Kong citizens. This research investigates the seriousness and number of defects and disorders of trees in different habitats that occurred in urban parks. To reduce accidents caused by tree defects and disorders, suggestions for the planting of tree species in urban parks are discussed based on the results of the study.

Research Objectives

1. Investigate the diversity of trees in urban parks.
2. Compare the tree defects between new urban and old urban parks.
3. Compare the tree defects between three similar habitats.

Methodology

To investigate the seriousness and number of defects and disorders in the parks, three common habitats are separated in Hong Kong Park, Hutchison Park, Kowloon Walled City Park, Carpenter Road Park, Tuen Mun Park, Wan Chai Park, and Yuan Long Park. Crown spread, DBH, and tree height are the basic tree information recorded during site visits and analyzed using the Shannon index with graphics and tables. As Kowloon Walled City Park does not have the habitat 'playground', part of Carpenter Road Park, which is near the Kowloon Walled City Park, was investigated. Three similar habitats were separated in the targeted parks, which are roadside, nearby water features, and playgrounds. The sampling sizes are the trees with 95 mm diameter or above at breast height (DBH) and 1.3 m in height or above and within 5 m of the separated habitats in the targeted parks. 500 trees in total were studied.



Figure 1. Kowloon Walled City Park and Carpenter Road Park.

Results

The results revealed that exotic species of trees might be one of the factors that lead to numerous defects in a park. The roadside was the habitat with the greatest number

and ratio of defects. Regular inspections of roadside trees in parks and planting native tree species are suggested.

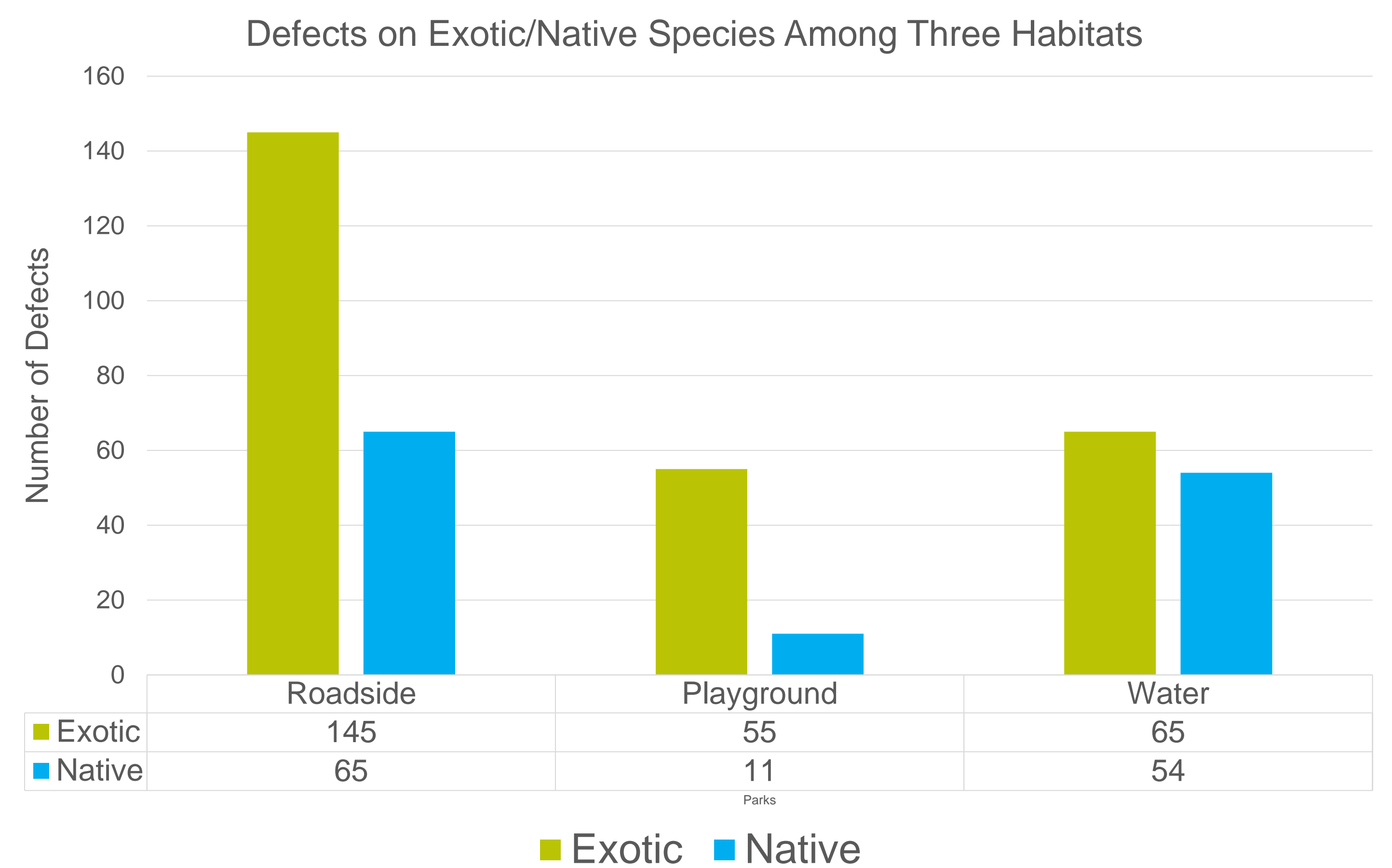


Figure 2. Chart of defects on exotic or native species among the three habitats.

Discussion

Half of the targeted old urban parks and half of the targeted new urban parks had more defects. This represents the history of the park might not affect the number of defects. The number of exotic tree species is more than that of native tree species in all targeted parks. Exotic species of trees might be a factor that leads to numerous of defects in a park. Exotic tree species might not be adapted to the environment and other abiotic factors such as microclimate and humidity. However, the abiotic factors were not measured in this study. Therefore, no supportive evidence of abiotic factors in microhabitats affecting the number of defects on exotic trees.

As exotic tree species might be one of the factors causing numerous defects, some native species listed below were suggested for future urban greening:

1. *Liquidambar formosana*
2. *Podocarpus macrophyllus*
3. *Pongamia pinnata*
4. *Ilex rotunda* Thunb. var. *microcarpa*
5. *Carallia brachiata*
6. *Sterculia lanceolata*
7. *Camellia crapnelliana*

Conclusion

To conclude, this study met partial of the expected hypothesis. Exotic tree species might affect the number and seriousness of tree defects. To ensure the public safety of park users and citizens, mitigation measures should be done, and native tree species are suggested to be planted for the urban greening plan.

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