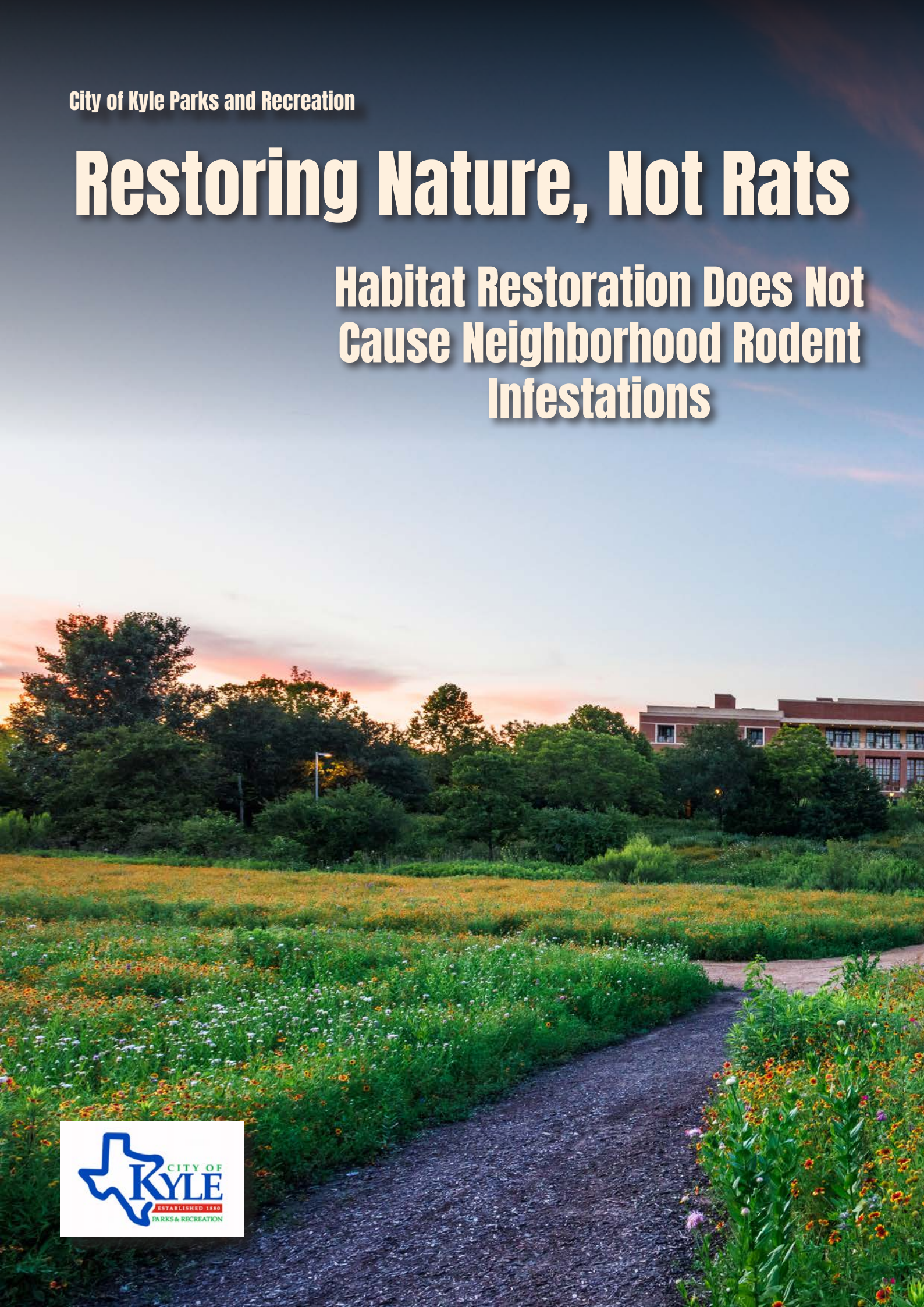
City of Kyle Parks and Recreation

Restoring Nature, Not Rats

Habitat Restoration Does Not Cause Neighborhood Rodent Infestations



Introduction

In response to community concerns regarding ecological restoration efforts in city parks and their potential connection to increased exotic rodent activity in nearby neighborhoods, this booklet provides a thorough, evidence-based overview of rodent ecology in urban environments. Drawing from peer-reviewed research, we examine the behavior and habitat preferences of both exotic and native rodent species and explain how restoration influences urban rodent dynamics.

Understanding the Concern

Residents in some urban areas have expressed concern that creating Ecological Services Areas in parks through restoration of native vegetation may cause an increase in exotic rodent species such as brown rats, black rats, and house mice in adjacent residential neighborhoods. This perception, while understandable, does not align with ecological evidence regarding rodent behavior, habitat preference, and population dynamics.

Exotic Rodents are Commensal

Exotic rodents, specifically the brown rat (*Rattus norvegicus*), black rat (*Rattus rattus*), and house mouse (*Mus musculus*), are commensal species. which means they thrive in human-built environments. They have adapted to live off humans, thus, they spread with humans to new locations.[1] Contrary to common belief, parks are not the source of exotic rodent populations. Instead, they prefer residential and commercial areas where anthropogenic (human-provided) food (garbage, pet food, bird seed), debris piles, and abandoned structures are readily available.[2,3] Since they do not prefer native vegetation, their persistence in neighborhoods is not driven by restoration efforts in parks. In fact, they persist in highly manicured landscapes as long as anthropogenic food remains accessible.[1]

Native Rodents Prefer Nature, Not Neighborhoods

Unlike exotics, native rodents prefer areas with native vegetation and are not attracted to residential neighborhoods or built environments. [4,5,6,7,8,9] Therefore, habitat restoration in parks supports native species that do not spread into adjacent neighborhoods.

Restored Habitats Increase Biodiversity and Attract Natural Rodent Predators

Native predation pressure is another critical factor to consider. Research in urban systems shows that urban landscapes with simplified vegetation, such as mown grass and impervious surfaces, reduce predator activity due to the lack of cover and foraging habitat. In contrast, commensal rodents can continue to occupy these areas because their persistence is tied to human-derived food resources rather than habitat structure.[2,10] Simplified landscapes in neighborhoods combined with continuous food supply create perfect conditions for exotic rodents to thrive unchecked.

Reducing Neighborhood Rodent Problems

Evidence from studies in multiple cities confirms that exotic rodent abundance closely correlates with access to anthropogenic food and debris coupled with derelict structures, not with native habitat restoration or park vegetation.[2,3,4,5] Effective long-term management of exotic rodent populations in urban neighborhoods relies on removing access to these anthropogenic resources.

Exotic Rodent Management Tips:

- **Secure garbage in sealed bins.**
- **Store pet food indoors or in rodent-proof containers.**
- **Clean up spilled birdseed from yards.**
- **Manage compost systems to prevent rodent access.**
- **Address debris piles and derelict properties.**

Myth vs. Fact

Myth	Fact
Restoring parks brings rodents into homes.	Exotic rodents are already in neighborhoods and do not need parks to thrive.
Mowed parks keep rodents away.	Exotic rodents persist in manicured areas if food is available.
Exotic rodents live in restored areas.	Exotic rodents don't prefer complex native vegetation.
Native rodents are a problem in cities.	Native rodents remain in natural habitats and do not prefer to be in or around homes.
Restoration worsens pest issues.	Restoration increases native competition and attracts natural predators which help to reduce pests.

Conclusion

Concern about exotic rodent activity being caused by habitat restoration in urban parks is not supported by ecological evidence. Exotic rodent populations are sustained primarily by access to human-derived resources not by natural habitat features. In contrast native rodents prefer complex native environments and do not prefer human structures. Therefore, the most effective strategy for curbing neighborhood rodent issues is a coordinated community effort to reduce access to garbage and debris while addressing derelict or abandoned structures.

References

1. Banks P. B. and Smith H. M. (2015). The ecological impacts of commensal species: black rats Rattus rattus at the urban–bushland interface. Wildlife Research, 42(7), 566–576. https://doi org/10.1071/WR15048
2. Shukla I. and Wilmers C. C. (2024). Waste reduction decreases rat activity from peri-urban enviro ments. PLoS ONE, 19(11), e0308917. https://doi.org/10.1371/journal.pone.0308917
3. Walsh M. G. (2014). Rat sightings in New York City are associated with neighborhood sociode mographics housing characteristics and proximity to open public space. PeerJ, 2, e533. https://doi.org/10.7717/peerj.533
4. Peterson, A. C., Ghersi, B. M., Campanella, R., Riegel, C., Lewis, J. A., & Blum, M. J. (2020). Rodent a semblage structure reflects socioecological mosaics of counter-urbanization across post-Hurricane Katrina New Orleans. Landscape and Urban Planning, 195, 103710. https://doi org/10.1016/j.landurbplan.2019.103710
5. Ghersi, B. M., Peterson, A. C., Riegel, C., Campanella, R., Childs, J. E., & Blum, M. J. (2021). Flooding and abandonment have shaped rat demography across post-Katrina New Orleans. Lan scape and Urban Planning, 215, 104218. https://doi.org/10.1016/j.landurbplan.2021.104218
6. Cameron, G. N., & Spencer, S. R. (2008). Mechanisms of habitat selection by the hispid cotton rat (Sigmodon hispidus). Journal of Mammalogy, 89(1), 126–134. https://doi.org/10.1644/06 MAMM-A-431.1
7. Cramer, M. J., & Willig, M. R. (2002). Habitat heterogeneity and rodent species diversity in a sand shinnery-oak landscape. Journal of Mammalogy, 83(3), 743–753. https://doi org/10.1644/1545-1542(2002)083<0743:HHARSD>2.0.CO;2
8. Green, N. S. (2012). Effects of habitat affinities and resource needs on edge responses by small mammals (Master's thesis, Baylor University). Baylor University Institutional Repository. https://baylor-ir.tdl.org/bitstreams/392cfcff-d094-4ed9-be23-44d8689701e9/download
9. Friscia A. R. et al. (2023). Live-trapping of rodents in urban green spaces across Los Angeles. Bulletin of the Southern California Academy of Sciences, 122(2), 122–130. https:/ doi.org/10.3160/0038-3872-122.2.122
10. Miller K. F. et al. (2022). Invasive urban mammalian predators: distribution and multi-scale habitat selection. Biology, 11(10), 1527. https://doi.org/10.3390/biology11101527