

Roaches Be Gone!

Safe Solutions for People, Pets, and the Planet

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Introduction

Cockroach infestations are a common issue in homes and buildings due to their attraction to warm, moist, and food-rich environments (Schal et al. 1984). Previous studies explored roach habitat preferences and tested various natural repellents such as essential oils, but not many have found effective, safe deterrents (Ngoh et al. 1998). The aim of this study is to determine what types of indoor habitats attract roaches (phase 1) and what natural products effectively deter roaches from the preferred habitat. The hypothesis of the study is roaches will prefer the blanket habitat and will deter from the preferred habitat when spearmint and light is present.



Materials & Methods

- 3 rectangular plastic bins (70 x 50 x 15 cm)
- 20 Discoid roaches, *Blaberus discoidalis*.
- Habitats: no habitat, carpet, blanket, newspaper, toilet paper, and natural (pine needles and bark)
- Deterrents: baking soda, spearmint, garlic, cayenne pepper, vinegar, and light

Phase 1: Five roaches were placed in the middle of a rectangular plastic bin (70 x 50 x 15 cm). The bins were divided into equal-sized areas of the 6 habitats. Every 2 minutes, the roaches were counted, and the results of their locations were recorded 3 times. This process was replicated 3 times in the 3 bins for a total of 9 replicates.

Phase 2: After recording the data in the first phase, the deterrents were added to the preferred habitat. Every 2 minutes, the roaches were counted, and the results of their locations were recorded. This process was replicated 3 times for each material, for a total of 9 replicates.



What habitat do roaches prefer?

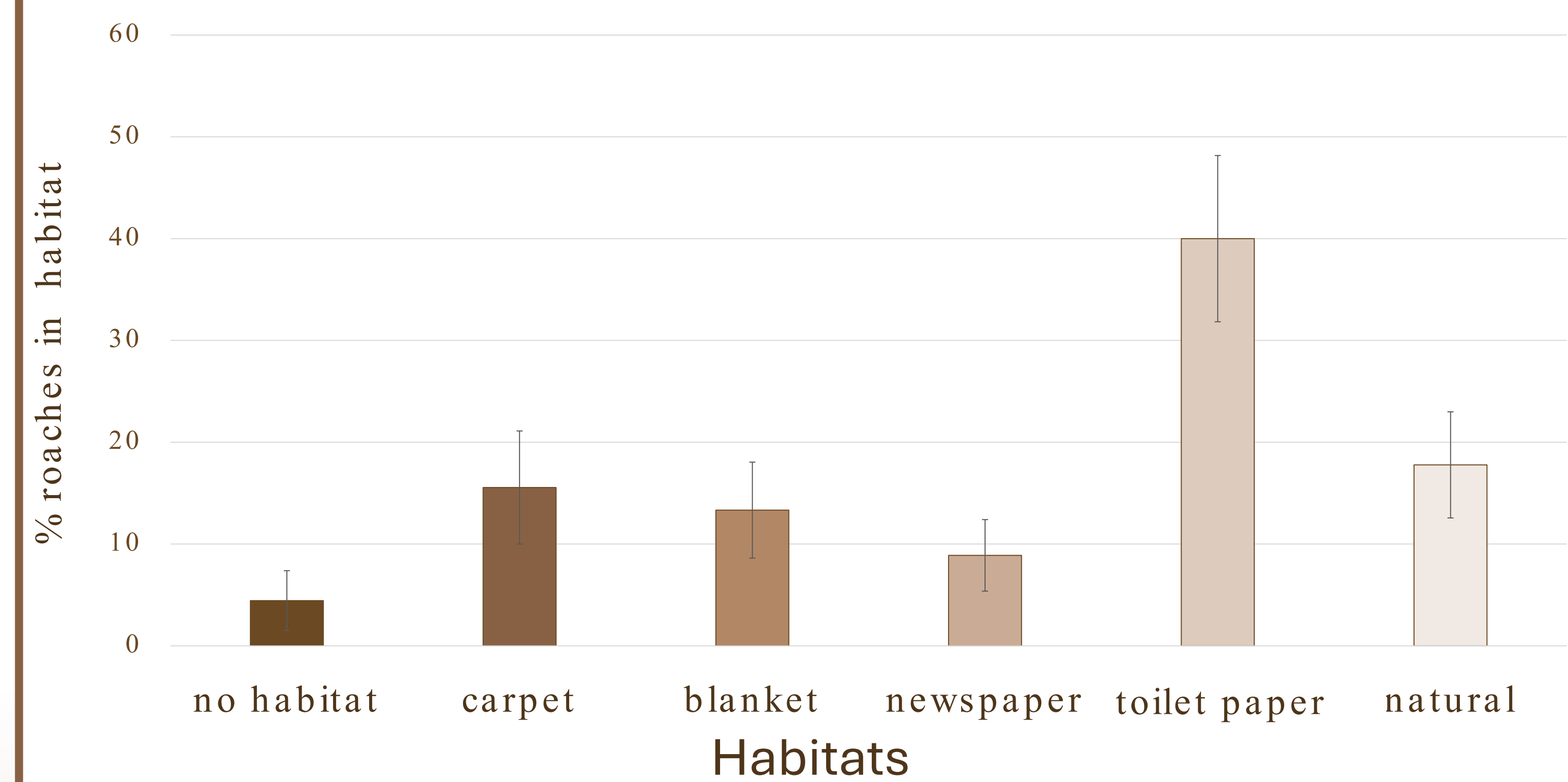


Figure 1. Habitat preferences of roaches in no habitat, carpet, blanket, newspaper, toilet paper, and natural habitats (mean ± SE).

What deters roaches?

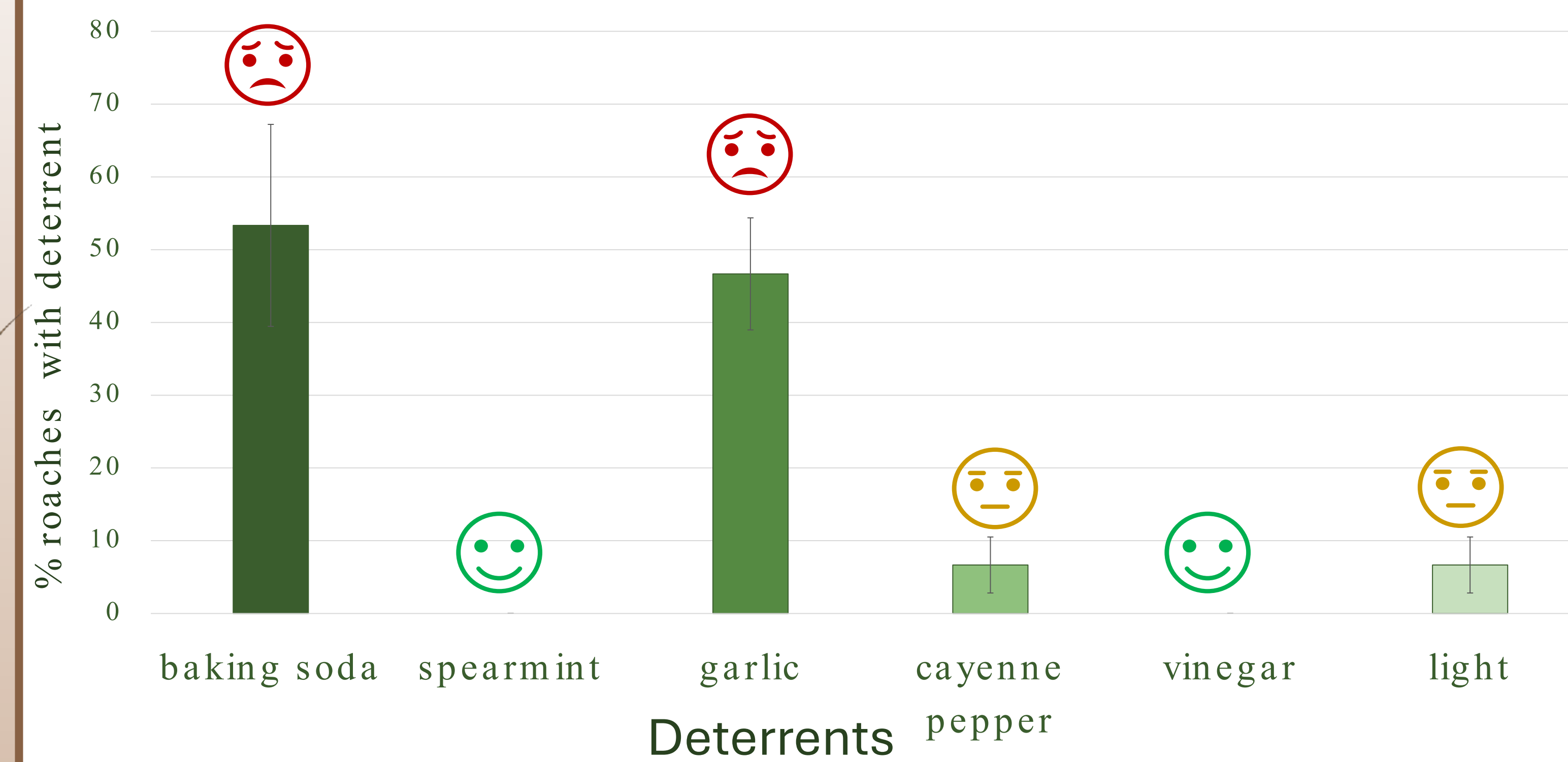


Figure 2. Percent of roaches located at deterrents: baking soda, spearmint, garlic, cayenne pepper, vinegar, and light (mean ± SE).

Results

- Significantly more roaches preferred the toilet paper habitat over no habitat, carpet, blanket, newspaper, and natural habitat (1-way ANOVA, $F_{5,48}=5.49$, $p=0.00045$, Figure 1).
- Significantly more roaches were deterred by spearmint and vinegar than baking soda, garlic, cayenne pepper, and light (1-way ANOVA, $F_{5,12}=4.22$, $p=0.01906$, Figure 2).



Discussion

The results of this study supported the hypothesis when the roaches were exposed to the habitat choices in Phase 1 and the deterrents in Phase 2. In phase 1, more roaches preferred the toilet paper habitat over no habitat, carpet, blanket, newspaper, and natural habitat. In Phase 2, significantly more roaches were deterred by spearmint and vinegar than by baking soda, garlic, cayenne pepper, and light. This aligns with previous research showing that certain essential oils and natural substances like mint and acidic compounds can effectively repel cockroaches (Ngoh et al. 1998). The impact of these results is significant, as the evidence of this study gives safe alternatives to deter roaches from people's homes, instead of the toxic pesticides previously used.



Acknowledgements

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