‘Haque A, Robinson A, Brown C, Cox G, Campbell S, 2024, Predator Free Port Hills: Current Trapping Efforts and Future Directions. A report produced for Predator Free Port Hills as part of the GEOG309 Research for Resilient Environments and Communities course, University of Canterbury, 2024.’

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Aotearoa was introduced to three species of rats in the 18th century, causing detrimental impacts to the country's native wildlife and biodiversity. Rats are one of the main contributors to the decline of native bird populations, alongside other pests. For this reason, Predator Free Port Hills (PFPH) have asked for support in their mission by analysing the distribution of trapping efforts throughout the Port Hills as our region of interest (ROI). To do so, three sub-questions were provided by our community partner:

1. Where are the residential gaps in trapping effort?
    a. How does this compare to the gullies of the catchment?
2. Many trapping households occur in "clusters". Is the trapping density in each cluster enough to create a buffer between the urban area and the bush?
3. Non-residential areas: What are they, and who owns them? Is there trapping happening?
    a. How does this help the residential buffer and influence where PFPH should focus efforts?

These questions provide context and collate to form our research question; "Where are the residential gaps in trapping efforts, how does this impact residential trapping buffers between urban and bush areas, and how do non-residential areas impact this buffer?". ArcGIS Pro, a geographic information systems (GIS) tool, was used to analyse spatial data provided by PFPH alongside data sourced from the LINZ Data Service and TrapNZ. Gullies were first delineated using the hydrology toolkit to indicate rat movement. Residential trapping efforts were classified using a 50m radius around each household, a substitution for the 100m trapping lines recommended by the Department of Conservation (DOC) to specify our analysis of residential trapping efforts used by PFPH. Residential trapping buffers were analysed using relative point densities of trapping households versus total households in each

area. Findings indicate significant trapping gaps throughout Hillsborough, Cashmere, and Heathcote Valley, with effective rural/bush buffers across Lyttelton, Governors Bay, and

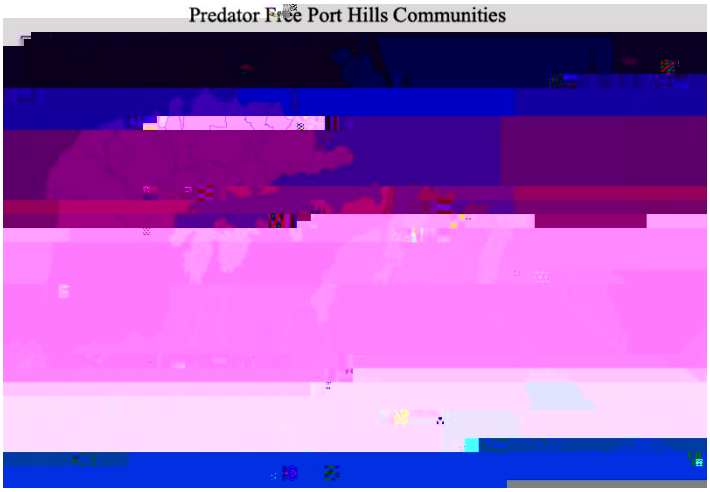

Figure 1:

Question 3: Non-residential areas: What are they, and who owns them? Is there trapping happening?

a. How does this help the residential buffer and influence where PFPH should focus efforts?

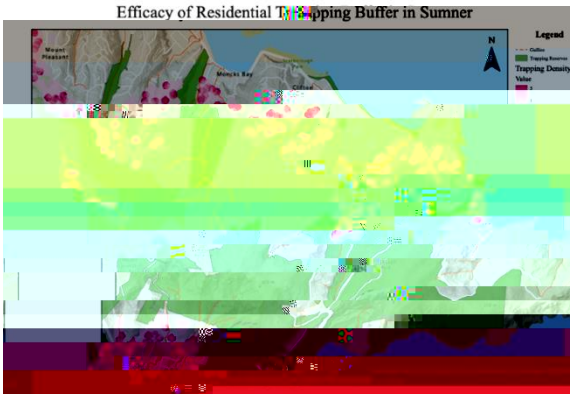

Figure 13:

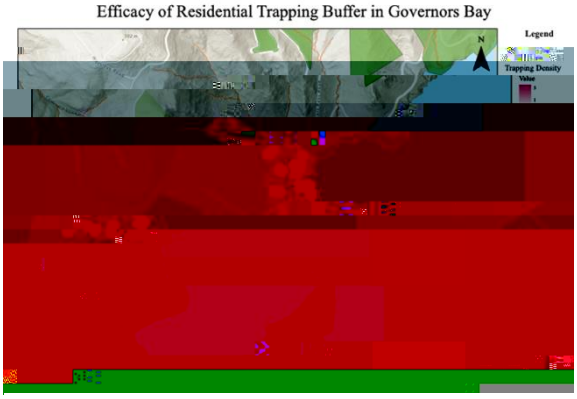

Figure 14:

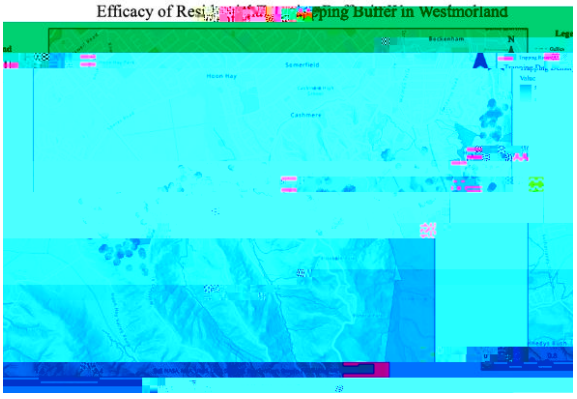

Figure 13:

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Biological Conservation, 191, 640-649.

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Predator Free Port Hills Data