

## Spatial distribution of mouse damage to the keystone plant species *Azorella selago* on Marion Island

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*Mus musculus domesticus*<sup>1</sup> populations on sub-Antarctic Marion Island are thought to have increased in recent years due to climatic amelioration and the eradication of feral cats<sup>2,3</sup>. It has been shown that mice have the potential to significantly alter ecosystem functioning<sup>3</sup>. For example, mice have played a role in the reduction of indigenous invertebrate fauna on Marion Island<sup>3,4</sup>. Recently it has been observed that mice may have a negative impact on the long-lived, keystone, indigenous vascular plant species, *Azorella selago* (Apiaceae). This is of conservation concern for Marion Island's biota, because (in addition to the impact on *A. selago* populations) the effect of mouse damage on the vitality of *A. selago* could alter the distribution of many other species (e.g. epiphytic plant species<sup>5</sup> and invertebrates<sup>6</sup>). Moreover, geomorphological processes, like the stabilisation of substrates, are also dependent on the occurrence of *A. selago* on Marion Island<sup>7</sup>. Here, we map the distribution of *A. selago* and signs of mouse activity on *A. selago* cushions across Marion Island using a combination of systematic and *ad hoc* sampling. Signs of mouse activity were observed from sea level up to ca. 765 m a.s.l. (Katedraalkrans hut); whereas the highest altitude recorded for mouse damage to *A. selago* was 548 m a.s.l. In plots (15 m x 10 m) where mouse damage to *A. selago* was recorded, 33 % of mouse burrows were recorded to occur in cushions with an average of 18.0 ( $\pm$  1.5 SE) per plot. Damage to *A. selago* cushions ranged from single to multiple burrows and, in some cases the excavation of entire cushions, suggesting that mice can kill *A. selago*. Furthermore, these results imply that mice have a negative effect on *A. selago* everywhere on the island, and thus, there is little refuge for the keystone species for as long as mice are present on Marion Island. It appears that the impact of mice on the indigenous flora of Marion Island has been overlooked, but the establishment of long-term monitoring plots can aid studies of the effects of mice on this keystone species.

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