

## SEARCHING FOR WEEDS – HOW TO SEARCH WHERE THE WEEDS ARE

Brown, J.A and .Williams, M.N.

Department of Mathematics and Statistics

University of Canterbury

Jennifer.Brown@canterbury.ac.nz

Sampling for rare events, such as a new weed incursion, is not easy. At most of the sample points the species of interest is absent and only occasionally the species is recorded. Very often surveillance and monitoring for rare events (e.g., new weed incursions) is done using local knowledge and a statistical sampling design is not used. The stated reason for this approach is usually because the biodiversity managers knew where to look and didn't need statistics.

Adaptive, unequal probability survey designs can be used in these situations, ensuring both sample effort is focused on locations where there is a high likelihood of a weed being present, and a probability based-survey designs is used. Time in the field is spent within locations where weeds are present and minimal time spent where weeds are absent. Any relevant information on where weeds are likely to be found (e.g., local knowledge and expertise) can be used to target survey effort in unequal probability survey designs.

The advantage of an adaptive, unequal probability survey design is that not only can field effort be focused on areas where the weeds are thought to be, in addition, important weed parameters can be estimated and reported along with estimates of uncertainty. Weed parameters include the proportion of the total area that weeds are present, the diversity of weed species, the total abundance of weeds, and the total area covered by weeds etc. With reliable and consistent estimates of these weed parameters (e.g., weed cover or abundance) the efficacy of weed management can be tracked. Over time, with regular reporting of weed cover or abundance, the success (or otherwise) of weed management strategies can be measured.