

## Program: Vital Rate Sensitivity Analysis – in Excel format

If you use this software in a paper for publication, or any other document, we would appreciate your citing the original source for this method:

Fefferman, N., and J. M. Reed. 2006. A vital rate sensitivity analysis that is valid for non-stable age distributions and for short-term planning. *Journal of Wildlife Management* 70(3): in press.

### Recommendations for VRSA use:

- 1) Download the zipped file & unzip and save it. In Excel, you will need to enable macros for VRSA to run.
- 2) When you open the file, you will see a blank Excel spreadsheet and two buttons – don't be alarmed. To start using the software, press the "Begin VRSA" button.
- 3) We tend to use VRSA on stage-based life tables (or age-based life tables, where the ages are in a limited number of categories). This is for 2 reasons, one practical and the other biological. The practical reason is that the more age categories in the analysis, the more difficult it is for VRSA to select a "most sensitive vital rate" with high confidence. The biological reason to use stages is that management often cannot be done separately for different ages in a population (e.g., managing 4 year olds separately from 5 year olds). Consequently, there is little advantage to knowing which vital rate, at this level, has the greatest effect on population growth.
- 4) If you wish to change the values in any of the Data Entry sheets and re-run the analysis, after altering the values, you need to re-run the analysis by pressing all the pertinent buttons again in sequence. Specifically, re-press the "I've filled out all required tables" button, then re-press the "Run Simulation", and the "Analyze Results" button, and the "Show Results" button in order to see the outcome of the altered data.)
- 5) This program only allows the comparison of two management strategies at a time. If you are interested in comparing more than 2, you will need to do the pairwise comparisons separately and interpret the results yourself. **A shorter alternative** to starting from the beginning and entering all the details again is to save a copy of the file under a different name after running the first VRSA analysis. Then go back and change one of the two sets of experimental management strategies and run the program again. (You will still need to start again with the "I've filled out all required tables" button. See point #4 above.)
- 6) The program will not automatically save the results of any one scenario. If you change the scenario and re-run the program, you will erase the previous results. To keep the results from more than one scenario, once you have run a scenario save the Excel file under a different name.
- 7) When you press the "Begin VRSA" or "Clear" buttons, all results are erased. Save all work you want to keep before you press these buttons.