The impact of simplicity: A case study with the threatened *Cirsium scariosum* population of Mingan Islands National Park.

Patrick Nantel

Species at risk program, Ecological Integrity Branch, Parks Canada, 25 Eddy St., 4th Floor, Hull, QC, Canada, K1A 0M5, < patrick.nantel@pc.gc.ca >, Ph: 819-953-4781

Planning the recovery of a species at risk is a stepwise exercise analogous to a medical treatment: the status of a population at risk needs examination, diagnosis, prescription, and prognosis. Transition matrices are powerful population models that produce results useful at each step. Building transition matrices usually requires detailed censuses made over many years. It is however possible to build simpler models using less detailed data collected over 2-3 years. But the impact of simplifying and shortening data collection has rarely been assessed on the recovery planning for a given species. I examined consequences of simplified data set, using a detailed one obtained from a long-term individual-based monitoring of the populations of *Cirsium scariosum* that has been ongoing since 1995 at Mingan Islands National Park. I compared population growth rates of the total Mingan population computed in three different ways; (1) the asymptotic □-values of the annual transition matrices and of the one averaged through the years 1995 to 2002, built from observed annual transition frequencies of nearly 700 plants; (2) the asymptotic □-value of the transition matrix built by regression, using yearly counts of plants by stage-class; (3) the observed annual growth rates, i.e., the number of all plants one year divided by their number the year before. Annual asymptotic and annual observed growth rates overlap some years, but the observed values are generally higher than the asymptotic ones. This means observed growth rates may bring misleading conclusions about the fate of the population. The transition matrix built by regression differs from the average matrix built from frequencies, and its □-value is lower. I also examined how the variance of the vital rates contributing the most to the □-value have stabilized over time. Results show that after 7 years, the variance of most of the critical vital rates has just started to stabilize. This stresses the importance of long-term censuses to obtain better examination and diagnosis.