



## **CAN FUTURE POPULATION TRENDS BE PREDICTED FROM CURRENT POPULATION BEHAVIOUR? EVIDENCE FROM A LONG-TERM STUDY ON A RARE ORCHID SPECIES.**

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The case study which will be used to illustrate this presentation is a study of the orchid *Ophrys sphegodes* (early spider orchid). This species was selected for study because of a dramatic decline in its range in the UK, amounting to about 80% in the last 50 years. The purpose of initiating the study was to understand flux in the population, and to use this information to compare and select between different management regimes in order to ensure the species' conservation.

Data have been collected every year from 1975-2006. This has involved censusing every emergent plant in every year of the study. In most years there have been several hundred emergent plants. Results from this study will be used in this presentation to consider whether it should be possible to make accurate predictions about the future behaviour of orchid populations, and whether reliable judgements about safe levels of harvesting can be arrived at that will not endanger populations. Repeated censusing of the status of the population, rather than counts, will be strongly advocated. The greater analytical and interpretative scope afforded by censuses will be illustrated, and the dangers of predictive modelling based on short-term datasets, and small sample sizes, will be addressed. The data will be used to show that, even in a large population that has been subject to the same management regime for many years, in a site which appears to have undergone little change over several decades, population behaviour is extremely variable between years, making prediction of future trends, either with or without a change in management or exploitation patterns, subject to high uncertainty, even in the short term. Although population biologists now possess sophisticated analytical tools for predictive modelling of future population behaviour, there is a shortage of high quality data available for use, even in the Orchidaceae, which, because of its charismatic status, is one of the best-studied, and most exploited, families of flowering plants.