

Mapping the genera of Cactaceae for the New Cactus Lexicon Supplement

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An important part of the content of the first supplement to *The New Cactus Lexicon* will be the production of distribution maps for all genera and some subgenera of the Cactaceae. To be useful the information in these maps must be as current and accurate as possible. Our objectives are to improve considerably on the earlier maps of Backeberg in his *Kakteenlexikon* by increasing both spatial and taxonomic resolution of the information presented. The base maps will be constructed using an inexpensive mapping package, Mapmaker (Map Maker Ltd, Carradale, Kintyre, UK), and GIS datasets of administrative boundaries freely available from the Internet. Sources of species distribution data will be combined from Internet-accessible databases, for example the Global Biodiversity Information Facility (GBIF), and from the personal records of professional botanists and leading amateurs. All geographic data will be transformed from GPS coordinates into linear cartographic coordinates using the Albers Equal Area Projection. To prevent misuse of the information we intend to produce distribution maps only to the generic/subgeneric level, thus it will not be possible to identify the location of individual species. Furthermore, the scale at which the maps will be produced and the size of the symbols used to represent an observation will also obscure the exact location. To date we have accumulated around 40,000 records, primarily from Internet databases. Unfortunately the observations in these data are very sparse even for some large, widely distributed genera, further, the taxonomic quality is highly variable with many misidentifications. We hope to improve both these faults by obtaining field observation data from leading amateurs. Initial indications from data on *Echinopsis* show that the two sources are complementary, for example, there were only 89 records for *Echinopsis* in the GBIF dataset whilst additional records from 3 amateurs increased this to 981 and filled in many gaps. Eventually we hope to collect around 70,000 records.