

# NOTES ON COLLECTING SEED FROM NATIVE PLANT SPECIES

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The following material has been adapted from: A Field Manual for Seed Collectors,  
Royal Botanic Gardens, Kew ([www.kew.org/msbp/scitech/publications/fieldmanual.pdf](http://www.kew.org/msbp/scitech/publications/fieldmanual.pdf)).

## Targeting A Population For Sampling

Following identification of a target species for collection, the collector must decide whether the population is suitable for sampling. It is often helpful to make a preliminary visit to the site to assess the populations, to confirm the identification, and to estimate the likely harvesting date and potential seed production. The most important factors in deciding whether to collect from a population include: a) there is imminent threat of destruction of a population or particular local interest in a population; b) the population has not already been adequately sampled and conserved by a seed bank; c) the population is genetically distinct (defined by soil, climate, altitude, pollinator's range, physical barriers to genetic mixing and so on); d) the population is wild, self-sown and not planted or cultivated; e) the seed is ripe, preferably still on the plant, and about to be shed; and f) seeds are not subject to extremely high levels of damage, predation or abortion.

## Sampling Strategy

It is important to maximize the number of alleles present within the sample by capturing the greatest proportion of these alleles represented in the field population. Research has indicated that at least one copy of 95% of the alleles occurring in the population at frequencies of greater than 0.05 can be achieved by sampling from 30 randomly chosen individuals in a fully outbreeding sexual species, or 59 randomly chosen individuals in a self-fertilizing species. As the reproductive biology of most target species has not been studied, and as the capture of rarer alleles would require a markedly increased sample size, collectors are advised to sample from more than 50 individuals from within a single population, if possible. A seed sample from a single population collected in this way would possess the potential for re-establishment at that site and perhaps for establishment at many other sites within the natural range of the species. However, in order to increase the probability of conserving material that can be successfully established elsewhere within the natural range of the species, collectors generally need to make additional population samples. (Reference: Brown A H D and D R Marshall. 1995. A basic sampling strategy: theory and practice. In L Guarino, V Ramanatha Rao, and R Reid. Collecting Plant Genetic Diversity, Technical Guidelines. CAB International).

## **Seed Collection**

Collect mature, dry seeds into either cloth or paper bags. As a rule, collect no more than 20% of the available seed on the day of collection. This ensures that the population sampled is not endangered by the planned seed collecting. The only exception to this is if a population is going to be destroyed. A collection of 10,000 - 20,000 viable seeds will enable maximum use of the collection so that sufficient seed will be available for initial germination and viability testing, viability monitoring can be undertaken at the seed bank for many decades, and a substantial sample can be conserved as a long-term safeguard against loss of the wild population, and as a resource for ecological, genetic and botanical study. However, for many native plant species, collections of less than 500 to 5,000 seeds are more likely. It is important to note that fully-formed but slightly under-ripe seed can often be successfully conserved if entire seed-heads and a short length of stem are collected and allowed to ripen in a well-ventilated environment.

## **Collecting Seed From Rare And Threatened Plant Species (eg: native orchids)**

Begin with small collections from the largest and most secure populations. For developing re-introduction protocols, make the smallest collections possible to address the management questions being posed in experimental re-introduction. To increase the probability of re-establishing successful, self-sustaining populations of threatened plant species, collect from as large and diverse an array of founders as is prudent. If possible, collect and maintain separately seeds from each maternal line. Where possible, spread the collection out over two or more years, especially for small populations. For species with 50 or fewer populations, collect from as many populations as possible. For species with more than 50 populations, collect from as many populations as possible up to 50. For populations with 50 or fewer individuals, collect from all known individuals; for populations with more than 50 individuals, collect from 50 individuals. For populations of species with extremely low overall numbers, particularly those that have 10 or fewer reproductive individuals and a poor history of recruitment, or are known to be in rapid decline, collection of seed should be made at the discretion of the collector. The decision about how much to collect should be based on as much information as possible, including species autecology, and nature of the threat. Record as much additional information about the population as possible. Avoid destructive sampling. Do not take herbarium samples if it will reduce the population's capacity for survival; take photos and detailed notes instead.

## **Care Of Collection In The Field**

Seed collections should be kept in a cool, dry place but should not be frozen. Care should be taken that seed collections do not overheat, for example by being left in a vehicle in full sun. Exposure to such sustained high temperatures can badly damage the seed collections. Attempts should be made to maintain ventilation around the collections at all times and the collecting vehicle should be parked in the shade, or at

the very least, the windshield shaded. Damp collections should, as soon as possible, be spread out on newspaper to dry naturally, either outside in the shade or in a well-ventilated room.