11.2.3 Collecting living material

Living material may be required for cultivation in botanic gardens and gardens of research institutions (Bridson and Forman 1998). Increasingly, these collections are required for conservation purposes by having a readily available source of viable seeds and/or vegetative material for use in habitat restoration
p. 263 (Offord and North 2 ↳ 009). Cryopreservation of germplasm (seeds, embryos, pollen, and other botanical tissue) at −130 to −196 °C in liquid nitrogen is a method of long-term storage of botanical material for conservation purposes (Hamilton et al. 2009). If requested to collect botanical material for cryopreservation, then detailed instruction would need to be provided prior to making the collection. However, as for collecting herbarium specimens, the collection of living plant material from natural communities represents a potential threat to rare species as well as local populations of more common plants. In general, the collection of living material is not encouraged unless there is an important reason to do so and the person making the collection is adequately proficient in both collecting living material and in maintaining this living material after collection. Note that sale or trade of living material is equally strongly controlled by many regulations. The following are critical points to remember when collecting plants (for further details see §11.6).

- Obtain collecting permits before collecting any material (see §11.6.1) and permission of the landowner before collecting on private land. Report illegal or unauthorized collecting that you encounter to the appropriate authorities.
- If you encounter a plant with which you are not familiar, assume it is rare and refrain from collecting until you have ascertained that it is not rare.
- Collect discriminatingly—even in large populations. Collect only the amount of material you will actually make use of. Care properly for any material you collect —do not let it go to waste.
- Avoid unnecessary damage to sites and their aesthetic values. Avoid frequent visits to the same sites.

If you must collect living plants from natural communities for scientific research, collect in a manner least likely to damage the wild population. Make sure that you understand why the material is required. Although pressed and dried herbarium voucher material can often be prepared with relatively little prior skill, always seek advice and instruction on how to best collect and store the living material.

In order of general preference, collect:

- Seeds, if abundant (see Gunn et al. 2004; Schmidt 2000). For information on how to collect seeds that represent the genetic variation of a species and hence are suitable for long-term storage, see Bridson and Forman (1998), Cochrane et al. (2009), Gunn et al. (2004), Offord and Meagher (2009).
- Cuttings or other plant parts: when plants can be collected and rapidly transported to plant nursery, it is convenient to collect cutting material. Hardwood cuttings of temperate and some tropical shrubs is an inexpensive and simple method for collecting material for propagation. In general, choose shoots with a section of older wood, last season's growth, and a few centimetres long. Softwood cuttings are not as resilient (Bridson and Forman 1998). Both types of cuttings should be dispatched as soon as possible by air, wrapped in moist newspaper and enclosed within a padded envelope.
- p. 264 ↳ Whole plants: this collecting technique is required for plants with recalcitrant seeds and/or herbaceous material that are not readily propagated from cuttings. Seedlings should be carefully packed, with moist shredded paper, preferably enclosed in an ethylene absorption plastic bag; a normal plastic bag can be used but should be opened every evening to allow the ethylene to escape, to reduce or avoid damage to the underground parts (roots, runners, or stolons). It is usually essential that cuttings are dispatched by air freight.