

Chapter

2

Establishing Priorities for a Plant Conservation Programme



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Summary

A project development framework is proposed which could guide those planning seed conservation initiatives. According to the framework, priority species and/or habitats for conservation are identified, based on institutional remit and expertise, political priorities and available botanical information. A collecting programme can then be developed taking into account factors such as plant locations, access to them, and seeding times.

Introduction

In a plant conservationist's ideal world, resources, time and information would be unlimited. In this world it would be possible to assess the conservation needs of all plant species and establish detailed and appropriate management plans, including both *in situ* and *ex situ* elements.

In reality of course, we know very little about the majority of plant species. We do not have a global list of plant species, let alone an assessment of their conservation needs. We do know however, that time is limited as many plant populations, and species, are threatened. In this context there is some pressure to take a pragmatic approach to achieving the most good with the finite resources, time and information available.

In the case of wild species seed banking projects, this generally requires a procedure to prioritise a number of species and populations for collecting and conservation. It will not generally be possible to develop an ecogeographical study for every species to be conserved, but certain information should be sought and considered in order to make the project as effective as possible. This short chapter briefly outlines a potential framework for this project development process. The framework is summarised in Figure 2.1 and is illustrated with examples from the Millennium Seed Bank Project (MSBP).

Although the focus for this paper is priority setting for seed bank collections, in the best of cases, the seed banking will be linked up with other conservation activities, such as *in situ* conservation, sustainable use projects and restoration and (re)introduction projects, thereby developing integrated conservation practices.

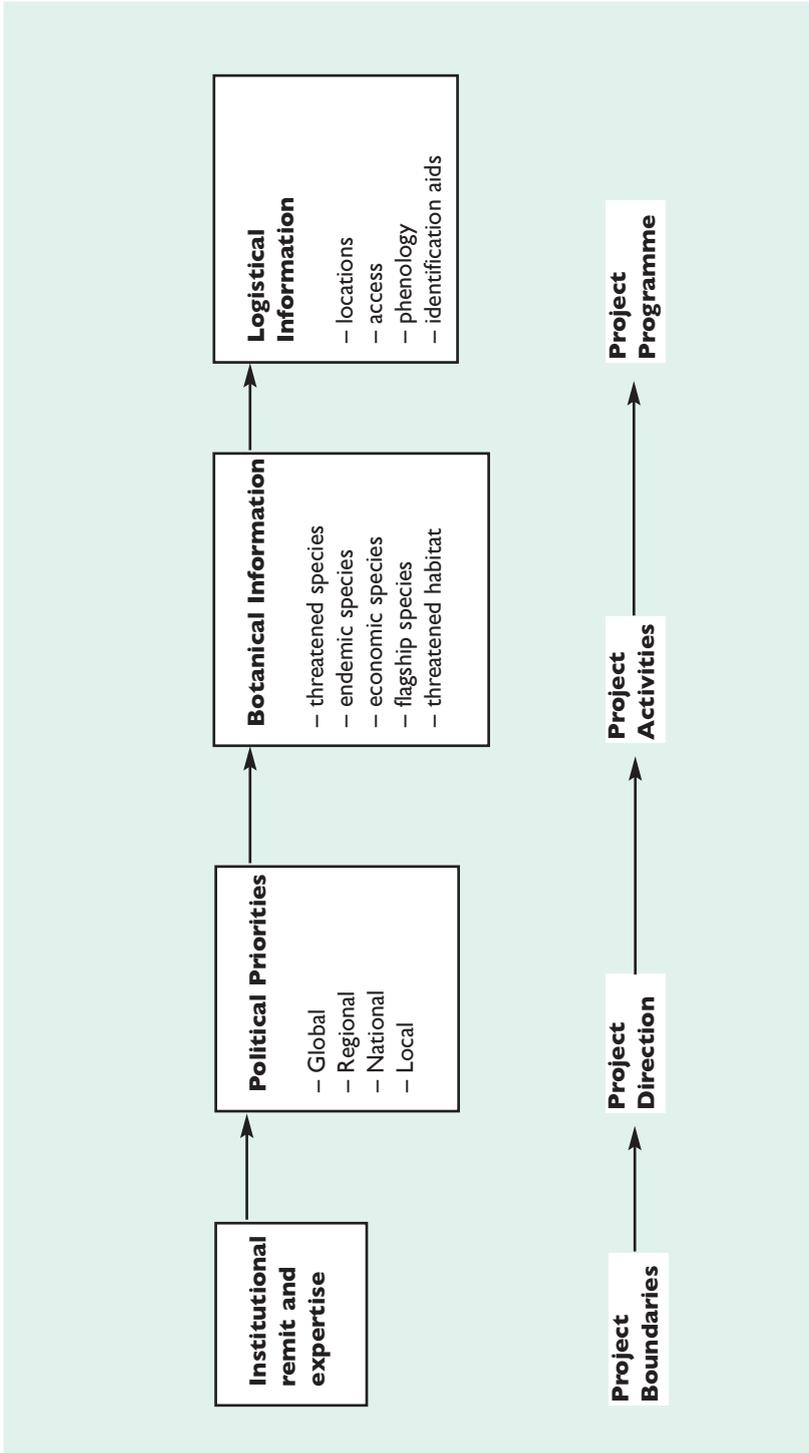


Figure A seed conservation project development framework.

A Project Development Framework

As has been outlined by Maxted (2003) – Chapter 3, a whole range of issues should ideally be taken into account when defining priorities for plant conservation. Different issues may be given different weight according to individual seed bank's circumstances. The availability of data will also influence the degree of consideration that can be given to each issue. Despite this need to adapt to circumstances, it is possible to suggest a general framework for the prioritisation procedure as outlined in the following sections.

1. Institutional Remit and Expertise

The boundaries of any conservation project will be set in the first instance by the institutional remit and expertise of the organisation(s) planning to undertake the work. Where a project requires external funding, the funder's priorities will also form a boundary to its activities. Clearly all the partnership projects of the MSBP will be based around seed banking and confined by the Project's focus on drylands. The geographic boundaries of MSBP partnership projects may be national or sub-national according to the institutional remit of the partner.

2. Political Priorities

Within the project boundaries it is vital to work within relevant political priorities. From a conservation point of view, this should ensure that the project activities support and complement other work in the area. It should also ensure the support of policy makers, especially where the project helps implement political commitments. In many cases, funder's priorities are guided by political priorities, and so working with these will help the project to secure funding, irrespective of the funders' affiliations. In short, political priorities can help give the project direction. They operate at a variety of scales.

At the international scale, all projects conserving biological diversity should now work within the framework of the Convention on Biological Diversity (CBD). Article 9 of the Convention encourages seed banking projects because it requires states to adopt measures for, and establish and maintain facilities for, *ex situ* conservation. Seed banking projects should also support the articles on *in situ* conservation, sustainable use, research and training, and public education and awareness.

The CBD also establishes the principle that states have a sovereign right over access to their own genetic resources and provides a framework for access and benefit sharing activities. For this reason it is important that projects are developed with the assistance of the CBD National Focal Point and national access and benefit sharing authorities where these exist.

Further guidance and opportunities arise from the CBD work programmes, for example on drylands and on forests. Most important of all for plant conservationists is the Global Strategy for Plant Conservation adopted at the Sixth Conference of the Parties in April 2002. This provides 16 targets for plant conservation to be achieved by 2010, including one for the *ex situ* conservation of 60% of the world's threatened plants. Helping Parties to the Convention to achieve these targets will provide kudos to institutions.

Additional political priorities for plant conservation can be found in the United Nations Convention to Combat Desertification, the United Nations Framework Convention on Climate Change and its Kyoto Protocol, and the Convention on International Trade in Endangered Species. The World Summit on Sustainable Development to be held in Johannesburg in August 2002 is likely to add to the international political context.

Agreements and initiatives are also in place at the regional scale which provide further guidance to conservation projects. For example, European seed banks may take direction from the EC Sixth Environment Action Plan and the Biodiversity Strategy. The North American Commission for Environmental Co-operation is developing a Strategic Plan for Conservation Biology which will outline regional priorities for conservation across Canada, the USA and Mexico.

Individual states may have further prioritised their plant conservation activities at the national and local level. In many cases, these are formalised in a National Biodiversity Strategy and Action Plan under the CBD. Municipal authorities and national parks authorities may define local priorities. These may point the project in different directions – for example giving guidance on the relative priority given to threatened, endemic and economic plants, or to common plants required for restoration. Priority may also be given to particular habitats and locations. For example, MSBP partners in Mexico are guided by the Priority Regions Program of the Mexican National Commission for the Knowledge and Use of Biodiversity (CONABIO).

3. Botanical Information

Political priorities can provide the direction for a conservation project – including the key objectives and activities, but further information is required to turn these into a programme of action based around prioritised geographical areas and/or species.

For example, if the objective is to conserve threatened species, then Red Data Lists will be the primary information source used to prioritise the species to be collected. If the defined objective is to conserve endemic species, then floras and checklists will be used to prioritise the species to be collected. Sometimes, as in the Namibian case (Kolberg, 2003 – Chapter 11), a system may be devised to develop a priority list of species that combines threatened, endemic and economic characteristics. In the case of seed banks, priority

species for conservation will probably exclude those with desiccation intolerant (i.e., unbankable) seeds. Whatever the objective, if any, with regard to priority species, information on habitats under threat should be used to prioritise species, or even populations, for collection.

Where the objective is to collect plants from specific habitats, or conversely across different habitats, then information on where these can be found will be required. Furthermore, it will be necessary to decide what scale of habitat classification to use and hence how many collections should be made for each species of interest. For example, MSBP partners at the Chicago Botanic Garden (CBG) wish to collect prairie species for restoration activities across the state of Illinois. The state falls across 6 ecoregions as defined and mapped by The Nature Conservancy but 14 physiographic provinces as defined by the Illinois Natural History Survey. The CBG have decided to collect each species of restoration interest across each physiographic province in which it occurs.

It may be possible to further prioritise species or habitats to be included in the project by looking at factors such as the current conservation status, their biological importance and the relative cost of conservation. However, significant time and resources may be required to compare targets using these criteria. Whether or not such analyses are undertaken will depend on the size of the list of targets, and the time, money and information available to do the analysis.

4. Logistical Information

Once the list of priority species (and possibly populations) has been decided, it will be necessary to develop a collecting programme, based on a number of logistical considerations.

4.1. Location

Wherever possible, it is important to map the locations of the plants that have been prioritised for conservation. This was achieved in Namibia using herbarium information and the ArcView 3.2 GIS system. This information can form the basis of the collecting programme.

In order to save time in the field, it will also be useful to consider where the greatest concentration of priority species is found and arrange the collecting programme around this. MSBP partners in Chile have used an analytical approach to this, based on parsimony analysis of endemism (see Morrone, 1994). The analysis assesses the distribution of target species across quadrats on a map, and prioritises quadrats according to the uniqueness of distributions of target species.

Sometimes distribution data will not be available for the area in which the collecting is to take place. It may be possible to use what data is available on environmental aspects of the habitats for which distribution is known to seek correlations between occurrence of species and environmental variables

(such as climate, soils and associated vegetation) and thereby produce potential distribution maps (see Sawkins *et al.*, 1999). This approach is currently labour intensive due to a shortage of accurately geo-referenced data on species occurrence and is therefore only likely to be carried out for species of very high priority. The current limitations should diminish as more herbaria data are made electronically available.

MSBP partners in Madagascar have taken an alternative approach. Based simply on personal experience, project staff have identified five sites of known high biodiversity. Seed collectors return to these same sites every few weeks throughout the year. Although less targeted, this approach does ensure that a high number of species are collected, thus increasing the chance of collecting priority species.

4.2. Access

Access to the plants and seeds should also be considered, both in terms of physical access and the ease with which permission to collect can be obtained. However, the most accessible plants may not always be the optimum populations for collection (see Soberon *et al.*, 2003 – Chapter 12).

4.3. Identification

All the planning in the world will be wasted effort if collectors are not able to identify target species in the field. Ideally, acknowledged local botanical experts should be included in both fieldwork and planning wherever possible, and it is also important that collectors take pictures, keys etc into the field. Where it is not possible to include local experts in fieldwork, two separate sets of fieldwork may be required. The first, to identify the priority species and their exact location, and the second, to carry out seed collecting. Clearly all time spent in the field can be used to collect opportunistically species of a lower priority.

4.4. Phenology

Obviously there is little point in a seed collector visiting a plant population when seed is not available and phenology of the priority species should therefore be a key consideration in the development of the collecting programme. Whenever possible, collectors should refer to databases detailing flowering times. Databases managing herbarium specimen data should have the ability to record, and therefore query, phenological status, although these can only ever provide a guide to when a plant might be flowering. For example, MSBP partners in Kenya refer to phenological data recorded in the Brahm's database. However, phenological data is not always available, and so seeding times may be estimated during an initial fieldtrip with a return trip being made to actually collect seed.

Conclusion

In order to achieve the most good with the resources and time available, *ex situ* conservation projects may aim to conserve a number of species as well as possible, rather than to conserve one species to the highest standards. To achieve the most good, these projects should be integrated as far as possible with other conservation tools such as *in situ* conservation, sustainable use, restoration, and (re)introduction projects.

Every conservation project will be different according to the circumstances under which it is developed and implemented. However, a basic project development framework can be described for seed conservation activities. According to this framework, a list of priority species and/or habitats for conservation is developed based on the institutional remit and expertise, political priorities and botanical information such as Red Data Lists. Once the priority species have been defined, a collecting programme can be developed, taking into account factors such as location of the plants, access to them and phenology.

Much of the project development process can be carried out using a desk study by the project development team. However, both local and specialist knowledge and expertise is vital, especially to the detailed planning of the collecting programme and its implementation.

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