

How to use the Florabank Seed Collection Advisor

(Section 7 of the Florabank *Species Navigator*)

Introduction

The Seed Collection Advisor will assist you to decide how to safely collect seed of good genetic quality.

First, click on section 7 of the Species Navigator – “**7. Navigate Species Collection Advice**”. To use this tool, you need to consider each species separately.

Note: The Seed Collection Advisor is Section 7 of the Species Navigator only – to use it, only select characters in section 7 of Species Navigator and not for any of the other categories.

The Seed Collection Advisor provides questions for you to answer separately for each of the following six topics:

- A. how your target species is distributed in the landscape you are working in and its fruiting characters relative to its distribution (Questions 1-4)
- B. whether your target species is from a list of particular genera (Question 5)
- C. what reproductive strategy the target species has (Question 6)
- D. what to do if you are making a range-wide collection (Question 7)
- E. Why you are collecting it – for example to set up a seed production area, or for a revegetation project (Question 8)
- F. If it will be difficult to collect from the wild in future (Question 9)

Each of these sets of topics will give you seed collection advice, but you will need to answer questions in only one of the above categories at a time, or the Seed Collection Advisor will return no results.

Not all of these topics may be relevant to your situation (for example, making a range-wide collection is unlikely to be relevant if you are doing a local revegetation project with a wide-spread species), so work through the ones relevant to your situation.

How to?

The steps you need to take and further information to use the Seed Collection Advisor for each of the topics A, B, C, D, E and F are given below:

A.

How your target species is distributed in the landscape you are working in and its fruiting characters relative to its distribution (Questions 1-4)

- Consider the distribution categories 1-4:
 - 1. Targeted species common, populations large
 - 2. Targeted species common, but populations fragmented
 - 3. Targeted species locally uncommon, fruits present but scattered
 - 4. Targeted population isolated and small
 - 4a. A targeted plant is isolated and in heavy fruit
- Which one of these is most appropriate to your target species and landscape?
- Select the most appropriate category, and then another level of questions will appear. Again, select the most appropriate category for your situation, and so on until the Seed Collection Recommendation appears in the right top window of the Species Navigator.
- When the Seed Collection Recommendation appears, look to see if it has a + sign. If so, click on this to see the expanded information.
- Use the Seed Collection Recommendation for your targeted species and landscape to collect appropriately so that your seed will be of good genetic quality.

B.

Whether your target species is from a list of particular genera (Question 5)

- Select Question 5 “**5. Factors to consider for species from these genera:**”
- Check to see if your target species is from any of the Genera listed in Question 5 and if so, select the appropriate Genera.

- When the Seed Collection Recommendation appears in the right top window of the Species Navigator, look to see if it has a + sign. If so, click on this to see the expanded information.
- Use the Seed Collection Recommendation for your targeted species and landscape to collect so that your seed will be of good genetic quality.

C.

What reproductive strategy the target species has (Question 6)

- Select Question 6 “**6. LIST TAXA BASED ON FLOWERING or SEEDING TIMES?**”
- To assist, the definitions of the terms are listed here:
 - **Dioecious** – Separate Male and Female plants (e.g. Casuarina)
 - **Forms adventive clumps via root system** - Spreads via suckers or vegetative root growth (e.g. some Melaleuca species))
 - **Known apomict** – Reproduces seed without fertilization occurring, clonal and genetically identical to its source plant (e.g. can occur in some native grass genera such as Poa and Bothrychloa)
 - **Known to flower and set seed on a temporal cycle** – Does not flower and set seed every year, or does so only at particular times (e.g. some Eucalypts have cyclical seeding with years of heavy seeding, also ‘mast’ seeding species)
 - **Mixed-mating system** (mainly outcrossing but is also self-compatible). Outcrossing means that viable seed is formed as a result of fertilization by pollen from an unrelated father plant of the same species. Self-compatible means that a plant can produce viable seed from fertilization with its own pollen. Mixed-mating means that an individual plant of the target species can form viable seed from its own pollen, and from the pollen of other unrelated plants of the same species. Many genera fit this pattern.
 - **Obligate outcrosser** – An individual of the targeted species can only produce viable seed from pollen from an unrelated individual, and cannot produce viable seed with its own pollen (e.g. some species of Dillwynnia, Pultenaea, Banksia). Also known as self-incompatible.

- **Self-compatible** – An individual of the target species can produce viable seed from its own pollen (self-pollination).
- It is not always easy to find out the reproductive system of your target species, and for many species this may not be fully known. There can be considerable variation within genera, for example Banksia species can be either mixed-mating or obligate outcrossing so it is not always possible to generalise. A good place to start is to do an internet search for the species name and “pollination”. For some species the reproductive system may not be known. If your normal search engine does not help, try “Google Scholar” which accesses scientific literature.
- Select the appropriate category for your target species.
- When the Seed Collection Recommendation appears in the right top window of the Species Navigator, look to see if it has a + sign. If so, click on this to see the expanded information.
- Use the Seed Collection Recommendation for your targeted species and landscape to collect appropriately so that your seed will be of good genetic quality.

D.

What to do if you are making a range-wide collection (Question 7)

- Select Question 7 “**7. Suggested range-wide sampling strategies based on distribution**”
- **A range-wide collection** is one which is trying to capture the maximum genetic variation across the entire range of a species. This usually does not apply if you are doing a revegetation planting (unless the species has a very restricted distribution within your locality). You would make a range-wide collection if you are conducting a range-wide provenance trial to see if there are fixed differences between plants of the target species which are sourced from different localities. These differences can be seen when the plants grown from seed collected at different localities across the species range are grown in a common garden site under the same conditions.
- Select the appropriate category which applies to the distribution of your target species.

- When the Seed Collection Recommendation appears, look to see if it has a + sign. If so, click on this to see the expanded information.
- Use the Seed Collection Recommendation for your targeted species and landscape to collect appropriately so that your seed will be of good genetic quality and suitable for a Range-wide collection.

E.

Why you are collecting it – for example to set up a seed production area, or for a revegetation project (Question 8)

- Select Question “ **8. My aim is to establish:**”
- Select the category that applies to your situation. The definitions are provided here:
 - **A family trial** – You are collecting seed from a individual parent plants and want to grow plants of known parentage to isolate different characteristics (e.g. different flower colour or tolerance to salinity).
 - **A provenance trial** – You are collecting seed from a range-wide collection (see D. above) to grow in a common-garden site in order to detect differences between plants grown from seed which was collected from different populations across the range of the target species.
 - **An Ex-situ conservation planting** – You are collecting seed to increase the numbers of plants of a rare or threatened taxa, and planting the resulting plants at a different site to the existing population (for example growing the species in a Botanic Gardens, or creating a new population at a different site).
 - **An In-situ conservation planting** – You are collecting seed to increase the numbers of plants in a population of a rare or threatened taxa, and planting the resulting plants at the same site as the existing population.
 - **Site remediation or biodiversity planting** – You are collecting seed for a revegetation project using local native species.
- When the Seed Collection Recommendation appears in the right top window of the Species Navigator, look to see if it has a + sign. If so, click

on this to see the expanded information.

- Use the Seed Collection Recommendation for your targeted species and landscape to advise whether or not you should mix the collected seed, and to ensure you keep the right records so that your collection meets the purpose you intend it for.

F.

If it will be difficult to collect from the wild in future (Question 9)

- In some cases you are collecting seed because that population will be destroyed (for example by development or mining), or un-available (e.g. because of land tenure changes and permit conditions) but you want to collect and retain the seed for future planting and to maintain the genetic variation of that population.
- In this case, select Question 9 “**9. Sourcing seeds from natural populations in the future will be difficult**”
- When the Seed Collection Recommendation appears in the right top window of the Species Navigator, look to see if it has a + sign. If so, click on this to see the expanded information.