Florabank Guidelines

Module 3

Approvals, Principles and Standards for Seed Collection

Peter Cuneo[1], Damian Grose[2,3], Brendon Neilly[4] and Timothy Sutton[4]

[1] The Australian PlantBank, Australian Institute of Botanical Science, Royal Botanic Gardens & Domain Trust, Mount Annan NSW

[2] Tranen Revegetation Systems, WA

[3] Revegetation Industry Association of Western Australia, WA

[4] NSW Department of Planning, Industry and Environment, NSW

How to cite these Guidelines

Commander LE (Ed.) (2021) 'Florabank Guidelines – best practice guidelines for native seed collection and use (2nd edn).' (Florabank Consortium: Australia)

How to cite this module

Cuneo P, Grose D, Neilly B, Sutton T (2021) Florabank Guidelines Module 3 – Approvals, Principles and Standards for Seed Collection. In 'Florabank Guidelines (2nd edn).' (Ed. LE Commander) (Florabank Consortium: Australia)

Disclaimer

Please be advised that the recommendations presented in this document do not necessarily represent the views of the agencies / organisations in which the authors are employed. These guidelines are subject to change. No responsibility will be taken for any actions that occur as a result of information provided in these guidelines.

Copyright

The update of the Florabank Guidelines was funded by the New South Wales Government through its Environmental Trust, as part of the Healthy Seeds Project, and administered by the Australian Network for Plant Conservation (ANPC). It was overseen by the **Healthy Seeds Consortium** consisting of representatives from the ANPC, Australian Association of Bush Regenerators, Australian Seed Bank Partnership, Centre for Australian National Biodiversity Research, Greening Australia (GA), NSW Department of Planning Industry and Environment, Royal Botanic Gardens and Domain Trust, and the Society for Ecological Restoration Australasia. The **Florabank Consortium** which will oversee implementation of the Guidelines consists of the Australian National Botanic Gardens, ANPC, CSIRO and GA.

Key points

Collecting seed from the wild generally requires licences and permits from a government agency. These licences differ between states and territories.

Native seed is a valuable resource and can be subject to unsustainable over-collection, resulting in adverse effects on plant populations, genetic diversity, local extinction and species loss. Licensing helps us protect and maintain our native plant populations.

Industry groups have a key role in supporting and developing a 'code of practice' that underpins the intent of licensing.

Maintaining good records on seeds (including collection, quality, storage, purchase and sale) contributes to consumer confidence that the seeds are sustainably and lawfully sourced and produced.

Labelling seed lots with information on collection location, storage conditions and seed quality assists the seed purchaser to determine the best use of the seed, may add to its value, and is likely to lead to better restoration outcomes.

Introduction

Whether working on a small or large-scale restoration project, accessing and collecting wild-source native seed is an important and positive step towards success. It is important to recognise that native flora is subject to a range of protections and controls under federal and state legislation. These controls may apply to the collection, propagation, cultivation and trading of both naturally occurring and cultivated plants and plant parts, including seed.

Australia is a signatory to the International Convention on Biological Diversity, which recognises the sovereign rights of States over their natural resources. Under these arrangements, state government environmental agencies are the primary point of contact for domestic flora licensing, including seeds. The flora licensing processes differ between each state, so it is important that specific advice is sought from the relevant agency responsible for licensing (see web links provided). When it is proposed to move seeds between states, contact will need to be made with the relevant agency in both the source and recipient state to confirm any licensing or biosecurity approvals. Finally, some states have established processes to manage genetic resources and bioprospecting, and the collection of material for some purposes may be subject to royalty payments or benefit sharing agreements.

Getting the right advice on the necessary approvals and licensing to legally collect plant material (seed and cuttings) can be a daunting process. These guidelines attempt to demystify this process, and provide a practical and straightforward approach to seed licensing, permits and standards which is presented in three sections:

1. *Legislation* – the legal framework for 'taking', 'picking' or acquiring native plant material, which is important to understand before planning any collections.
2. *Guiding principles* – ecological and other considerations for sourcing native plant material, and what legislation and regulations are trying to achieve.
3. *Seed standards* – commercial seed licensing, codes of conduct, seed quality and accreditation in Australia.

Section 1 – Legislation

Native flora is protected by a range of legislation at the federal and state level. These pieces of legislation govern how native flora is managed as a whole and establish the parameters for how it can legally be used and acquired. The legislation also sets out the penalties for unlawfully taking native flora, which can be high. For example, in Western Australia, the current penalties for unlawfully taking flora can be as high as $500,000 for individuals, and $2.5 million for corporations. It is therefore important that people considering collecting native seed and plant material have a good understanding of the law and how it is applied in their state/territory.

The federal environmental legislation is the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). This legislation is generally focussed on the protection of matters of national environmental significance (e.g. world heritage, wetlands of international importance, nationally threatened species and ecological communities). The EPBC Act incorporates provisions for the import/export of native material; and includes listing of species that are nationally threatened, however this conservation status for individual species is not automatically reflected in state/ territory legislation. At a local and state level, authority for managing flora is delegated to the states, which have their own legislation that regulates the collection and use of plant material. Table 1 lists the current legislation protecting flora in each state, and the authorities responsible for administering the legislation.

In most jurisdictions, a schedule or list of priority species is linked to, or referenced in, the legislation. This may include threatened species and non-threatened species that are impacted by particular activities or industries (e.g. cut flowers, craft wood, timber).

Table 1. Principal primary legislation protecting flora in each jurisdiction and the authorities responsible for administering the legislation. Other legislation and authorities may also be relevant.

Jurisdiction	Key Legislation*	Licensing Authority
Commonwealth lands	Environment Protection and Biodiversity Conservation Act 1999	Australian Government Department of the Environment
ACT	Nature Conservation Act 2014	Environment, Planning and Sustainable Development Directorate - Environment
NSW	Biodiversity Conservation Act 2016 National Parks and Wildlife Act 1974	Department of Planning, Industry and Environment (Environment, Energy and Science Group)
NT	Territory Parks and Wildlife Act 1999 Biological Resources Act 2006	Parks and Wildlife Commission of the Northern Territory
QLD	Nature Conservation Act 1992	Department of Environment and Science
SA	National Parks and Wildlife Act 1972	Department for Environment and Water
TAS	National Parks and Reserves Management Act 2002 Crown Lands Act 1976 Threatened Species Protection Act 1995 Nature Conservation Act 2002	Department of Primary Industries, Parks, Water and Environment
VIC	Flora and Fauna Guarantee Act 1988	Department of Environment, Land, Water and Planning
WA	Environmental Protection Act 1986 Biodiversity Conservation Act 2016	Department of Biodiversity Conservation and Attractions

*Parent Acts listed. Subsidiary legislation (e.g. regulations or guidelines) apply.

Licensing

States and territories regulate access to and protect native plant populations by regulating the collection of plant material from the wild through licensing and permit systems. The term licence is used collectively for permits for the remainder of this chapter. Key legal definitions and offences around seed/plant collecting are usually described in terms of impact, e.g. to 'pick' or 'harm', 'deal' or 'trade' native flora. The act of introducing (i.e. planting, seeding) plant material (including seeds) is generally only regulated in parks or reserves; however, additional controls may be in place when working with listed threatened species or ecological communities, or where there may be a biosecurity risk (e.g. dieback or myrtle rust), or if importing seed into states or territories with quarantine regulations (e.g. WA).

When preparing a licence application, it is important to provide the relevant detail and background information on your project such as ecological restoration or conservation objectives. Licensing agencies will primarily be concerned with assessing the overall and cumulative ecological impact of activities on native vegetation, and particularly the species to be targeted. Carefully consider whether to include threatened species in the collection activities, as this will usually require more justification and is more stringently assessed by licensing agencies. Box 1 contains a seed licencing checklist with some items for consideration.

State and Territory licensing systems generally provide for the commercial trade or use of harvested/collected or grown plants and plant parts, including seeds. Additional conditions may apply to the commercial use of plant material including additional tagging, record keeping or notification requirements. It is worth noting that some jurisdictions provide exemptions to licensing for some non-commercial actions when they are for "hobby" purposes. State and Territory licensing agencies are able to provide advice on what conditions apply in your jurisdiction. The purpose of the collections will also be taken into consideration by the licensing authorities. Depending on the jurisdiction, different classes of license may also be issued (e.g. scientific purpose, commercial purpose, etc). In some jurisdictions, different license types may be required for threatened species, and thus multiple licenses may be required for some projects.

There are four principal items that inform the licensing assessment of a particular activity:

1. The legislative status of the species being targeted (threatened, protected, unprotected).
2. The legislative status of the vegetation community from which the material is being collected (threatened, protected or otherwise).
3. The land tenure on which the collection will be made (private land, public land, conservation reserve, Aboriginal owned or managed land).
4. The quantity of material to be collected.

As the legislation and licensing arrangements vary by state, it is not possible to provide a single piece of advice for every state or situation. In general, a seed collection licence is required before threatened or protected native flora can be taken, unless there is an exemption. In order to comply with state or territory requirements and avoid non-compliance issues, contact the relevant licensing authority for advice on the licensing requirements for your project. Before approaching them, consider the following questions. In most cases this information will form part of the application.

Target species and quantities – what are the target species?

Determining what is to be collected is a key principle in all assessments (see also Module 1 – Introduction and Module 5 – Seed Sourcing). There may be particular species on the target list, or you may target all species in the ecosystem. Priority or threatened flora may require a specific permit or licence. Some non-priority flora may also be generally or locally restricted (e.g. cut flower industry targets) so alternatives or substitutes could be required. The part of the plant being targeted (i.e. seed, cuttings, stems, roots, etc.) may need to be taken into consideration. Target quantities may also be important as quotas may be imposed on certain species, and it is important for ecosystem resilience that only the required quantities are taken. Developing a restoration plan and seed collection plan is essential. See also Module 6 – Seed Collection and Module 7 – Seed Production.

Source location – where are the target species present and how can they be legally accessed?

Public land such as national parks, state forest, roadside reserves, Crown land, local government reserves, or privately owned land may all require difference licence types. Written authority from the landowner / manager will generally be required to obtain a licence. Some areas of high conservation significance and/or threatened species habitat may be more protected and difficult to access than others, so consideration of multiple source locations may be required.

Seed production

In some states and territories, the cultivation of native species for seed production (seed production areas) on private land also requires licensing, to track the sources of all seed, and prove that seed produced is from cultivated origin and not wild source. As this cultivation of seed takes place independently of wild populations, it is likely that this activity would be included in future reviews of seed licencing and codes of practice.

Purpose – what is the purpose of the collections i.e. commercial, volunteer, scientific, training, etc.?

Different licence types may be required based on the purpose. Detailed project plans and justification may be required for some licence types. Activities may be considered as one purpose by the individual but differently in the legislation; check the official definitions and seek advice from the licensing authority if necessary.

Who – who will need a licence?

Depending on the source location and purpose, licences may be issued to individuals, companies, associations or community groups, etc. The activities in which people will be involved may also need to be considered. For example, in some states and territories, it is only the act of taking the material that is licensed. People assisting in the field in gathering or processing the taken material may not specifically need to hold a licence. Some exemptions may also apply for Indigenous Australians for cultural purposes.

Timing – when are the target species ripe to collect?

Licences are generally valid for a set period of time that will be stipulated on the licence, and some jurisdictions support licence terms for up to five years. Consider the target species maturation timing, or ideal season in which to collect cutting material, to ensure that the licence will be valid when required. For some species, the collection window is short (days to weeks), and others may be harvestable year-round. Licence application processing times could be significant (up to several months), and this should also be factored into project planning.

Excess seeds – what will happen to seeds that are surplus to requirements?

Will they be stored in a seed bank, given away (i.e. to community groups or state authorities), returned to the source location, or put up for sale? In most jurisdictions, a specific licence type is required if they are to be sold. If the original collections were made under a non-commercial licence, then a new licence may be required before they are offered for sale or traded as part of not-for-profit activity.

Box 1. Seed licencing checklist

Before contacting the state/territory licencing team, take time and think about the following which will be needed to complete the licence application:

- Collecting location and vegetation type.
- Species that you will be collecting (seek local specialist advice and flora guides).
- Purpose and likely benefits of your seed collection.
- Timing of your seed collecting activities and how long you will need a licence (some species will require repeat collections to achieve target quantities).
- What is your collection target and is that target likely to be sustainable for the source population?
- Have you referred to relevant state or territory legislation to look up the protection status of the seeds you intend to collect? Are you including any protected or threatened species?
- Check to see if your intended collection location is a threatened ecological community or threatened species habitat.
- Are there likely biosecurity risks in the area in which you intend to collect (e.g. dieback, myrtle rust)?
- Do you also need to apply for a quarantine permit to import seeds into a different state or territory?
- Have you consulted the relevant land-owner or manager?

Recording keeping for seed collecting

Licensing conditions normally require annual reporting on collections, so it is important to keep up to date records of seed collections. Refer to Module 4 – Record Keeping for guidance on record keeping systems. Licensing agencies / conditions will normally specify the minimum information required and provide a template with key information which will usually include:

- species;
- plant part (i.e. seed, flower, cuttings, etc.);
- date;
- location details (which may include co-ordinates, reserve names, addresses, local grid references, etc.);
- quantity; and
- to whom the seed was supplied/sold.

Accurate reporting is important, as it provides up to date records on species distribution which are usually added to the agency databases (often publicly available online, e.g. Atlas of Living Australia, BioNet in NSW, Florabase and Naturemap in WA; see Online resources section). Data collected from licensed activities is maintained and used to support future decision making and management. Ideally, herbarium specimens are taken at the time of seed collection for lodgement with your state herbarium and confirmation of the species collected. This provides permanent and valuable 'gold standard' data on species distribution for future reference.

Renewing licences

Processes vary between jurisdictions with regards to licence renewals. In most cases some level of reporting on the activities conducted under the previous licence is required, and renewal licences may not be issued until such reports have been submitted. Practitioners should not rely on the licensing agency to advise of pending licence expiries, as this is not generally a requirement under the licensing legislation. Where renewal notices are sent, this is usually done between 30 and 90 days prior to the licence expiry date.

Licensing information and links

New South Wales
https://www.environment.nsw.gov.au/licences-and-permits/scientific-licences
https://www.environment.nsw.gov.au/licences-and-permits
https://www.environment.nsw.gov.au/licences-and-permits/protected-native-plant-licences

Northern Territory
https://nt.gov.au/environment/animals/wildlife-permits/permits-take-interfere-with-wildlife

Queensland
https://www.qld.gov.au/environment/plants-animals/plants/protected-plants/harvesting

South Australia
https://www.environment.sa.gov.au/licences-and-permits/plant-permits

Tasmania
https://dpipwe.tas.gov.au/conservation/publications-forms-and-permits/forms-and-permits/scientific-permits-and-authorities-to-collect-native-flora

Victoria
https://www.environment.vic.gov.au/conserving-threatened-species/flora-and-fauna-guarantee-act-1988/protected-flora-controls

Western Australia
https://www.dpaw.wa.gov.au/plants-and-animals/licences-and-authorities?showall=1

Section 2 – Guiding Principles

The native seed resources required to meet the challenge of ecological restoration across Australia are enormous, however native seed is a precious resource and species and ecological communities can be adversely affected by unsustainable over-collection. Licensing helps us protect and maintain our valuable protected native plant populations, as well as make sure people are working with them have the experience and knowledge to correctly identify target species and work responsibly. Ecologically sustainable collecting practices should always be followed, and seed collection should never deplete the natural population (Offord and Meagher 2009; Martyn Yenson et al. 2021.). The main objective behind licensing is not to deny access to seed, but to ensure the long-term sustainability of collecting activities and protection of ecosystems.

For both restoration and commercial seed collectors, the following key considerations should underpin all activities:

- Ensure compliance with collecting quantity limits specified in licensing conditions. Collection limits are very important, particularly where you may have highly reduced or fragmented vegetation that is subject to multiple collecting events.
- Always assess local vegetation condition before collecting to determine a harvesting plan. Highly fragmented vegetation such as roadsides or other accessible small remnants where plant populations are restricted should be avoided if larger, more genetically diverse populations exist.
- Access to collection sites should not impact or degrade the long-term ecological values of the target native vegetation. Collectors should practice basic plant hygiene procedures, and ensure they are not introducing soil diseases or weed propagules.
- Sufficient seed material should remain to allow for soil or canopy seed bank accumulation, particularly for obligate seeding species, and hence maintain natural regeneration.

Further guidance on seed collecting strategies, genetic considerations and provenance issues can be found in Module 5 – Seed Sourcing and Module 6 – Seed Collection. For commercial collectors or large-scale restoration projects, consideration should be given to establishing or sourcing seed from seed production areas which can provide large quantities of high-quality seed (see Module 7 – Seed Production), in preference to repeated unsustainable harvesting from native vegetation.

Section 3 – Seed standards and accreditation

Ecological and sustainability principles applying to seed collecting are increasingly important, particularly as many jurisdictions are moving towards 'code of practice' based regulation. For some states and territories, activities such as seed collecting of widespread/common species (least conservation concern) and some commercial harvesting of plants will be regulated by a code of practice. Codes present a practical guide for people so they can abide by best practice standards and exceptions. Codes also allow for industry or self-regulation by outlining ways in which people can meet their legal obligations.

The legal status of codes varies among jurisdictions. Some can be legal instruments that replace the need for a licence (e.g. the Flying-fox Camp Management Code of Practice developed under the NSW *Biodiversity Conservation Act 2016*), while others may be best practice guidelines that set industry standards but may not be legally enforceable. Importantly, even codes that are not legally binding can play an important role in regulation if they are developed with and/or acknowledged by agencies that issue licences. Industry groups have a key role in supporting and developing 'codes of practice' or 'codes of professional conduct' to refine other legislative instruments and provide industry specific context for regulated activities. Following a code of practice also builds confidence in seed purchasers, seed users and the wider public that best practice has been implemented in restoration activities.

Conservation legislation and regulations are formal legal instruments which operate at a state or national level. For the native seed sector which operates at a commercial scale, sustainability and seed quality remain key issues; however, in contrast to agricultural, forestry and horticultural markets there is an absence of strict industry standards and legislative obligations that dictate the viability of seed at sale and the requirement to provide labelled information on its quality (Hancock et al. 2020) (Figure 1). Wild species seed can vary in dormancy state, seed mass, purity and quality across seasons and geographic range (Pedrini and Dixon 2020). Acknowledging the complexity of native wild seed standards, Pedrini and Dixon (2020) propose a standards framework for native seed quality which recommends the following quality assessment for seed batches offered for sale or use in restoration:

- purity testing;
- viability testing;
- germination testing;
- indication of proportion of dormant seeds in the seed batch (% pure dormant seed); and
- indication of seed enhancement treatments, e.g. coating, priming.

See also Module 10 – Seed Quality Testing, and Module 11 – Seed Germination and Dormancy, for comprehensive information on seed testing.

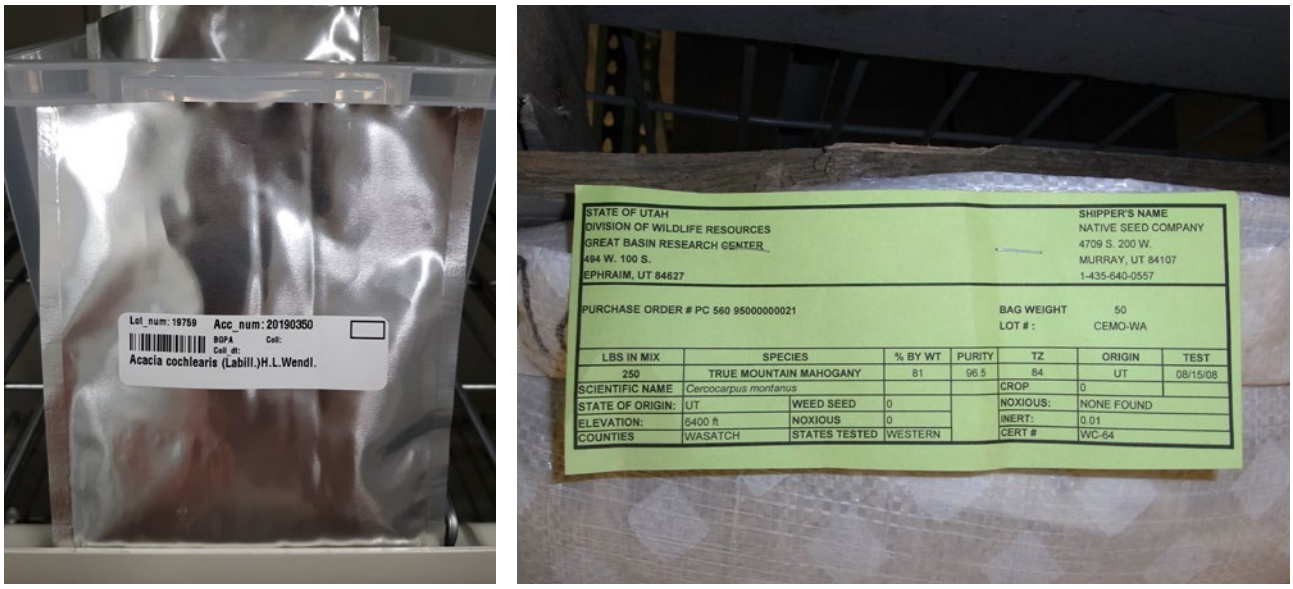

Figure 1. Examples of seed labels (left) showing minimal information, just species name, lot number and accession number, but linked to a full electronic record and (right) a label showing comprehensive information including scientific and common name, origin, purity and viability. (Photos: L. Commander)

In Western Australia, one industry body, the Revegetation Industry Association of WA (RIAWA) has developed a set of native seed standards and created an accreditation system based on these standards. This system is only one of two in the world (León-Lobos et al. 2018), which is seen as a potential template for the native seed industry both nationally and internationally. The goal of the system is to provide seed purchasers with peace of mind that they are buying quality seed that has been sustainably and ethically harvested. The standards reference the first edition of the Florabank Guidelines and have been adapted to create a set of best practice guidelines for the local industry. The Standards and Accreditation Guidelines are published on the RIAWA website and are freely available for others to view.

The native seed collecting, processing, and supply standards centre around seven key areas:

1. Seed harvesting (team sizes, experienced leaders, sustainable harvesting techniques, provenance, seed health and genetics, identification, etc.)
2. Seed processing (processing techniques, record keeping, quality control)
3. Seed storage (environmental storage conditions, pest management)
4. Seed marketing and supply (grading, labelling)
5. Payment of contractors and staff
6. Seed production areas (genetic integrity, declaration of source)
7. Collector training (casual / untrained staff)

Under the RIAWA native seed accreditation system, seed collected and harvested in accordance with the standards by accredited individuals may be promoted and sold as RIAWA Accredited Seed. This gives seed sellers a way to differentiate their product and provide seed buyers with peace of mind that they are purchasing seed of known quality.

The RIAWA accreditation system based on their standards recognise three different categories of accreditation: individual, corporate, and supplier. Individual accreditation is generally for sole operators, or for individuals employed by a corporation. Corporate accreditation is for organisations that employ multiple accredited collectors. Collectors generally must have two years of field experience before being eligible for accreditation, unless they are employed by a corporate member and can demonstrate sound knowledge in the standards and that they are being adequately supervised and trained. Supplier accreditation is for companies that act as seed brokers and do not directly employ seed collectors.

As part of the system, suppliers must also declare the grade of the batch (conservation, commercial, or direct seeding). The following grades are outlined in the RIAWA system based on the level of testing, purity, and minimum conditions under which the seed has been stored:

- *Conservation Grade* (correct collection and long term storage procedures followed, standard labelling with exact location, cleaned to match industry purity standard, cut test information and seed purity data provided and filled/viable seeds per gram data provided, germination test /x ray test results provided, voucher specimen of species collected supplied and identification by botanist).
- *A+ Grade – Commercial Plus* (correct collection procedures followed, cleaned to commercial purity and stored to medium term standard (temperature <25°C, relative humidity <60%), standard labelling including filled, viable seeds per gram).
- *A Grade – Standard Commercial* (correct collection procedures followed, cleaned to commercial purity and stored to medium term standard, standard labelling and confirmation that viability test performed).
- *B Grade – Minimum Commercial* (correct collection procedures followed, cleaned to commercial purity and stored to minimum standard (cool, dark room), standard labelling and confirmation that viability test performed).
- *C Grade – Seeding Grade* (correct collection procedures followed, not cleaned to commercial purity (more chaff etc.) and seeds stored to minimum standard, standard labelling)).

To assist purchasers, a seed purity database has been developed by RIAWA outlining the minimum purity percentage and acceptable industry standards for the most commonly collected and traded species. This was created by a collaboration of the main seed merchants in WA.

In other states and territories, seed suppliers could provide similar information to the purchaser, i.e. by providing information on collection location, collection date, storage conditions, seed purity, seed fill and seed viability and/or viable seeds per gram, as recommended in Module 10 – Seed Quality Testing. The RIAWA accreditation system provides a template which could be adopted elsewhere.

Buying seed

A licence is generally not required to buy seed. In some states and territories, a dealer's licence may be required for individuals / companies selling seed. Even if not, records may need to be maintained for seed sales / transfers and produced to regulatory authorities upon request. Although there is no legal requirement to do so, for consumer confidence that seed has been collected/produced sustainably and sold lawfully, purchasers should confirm with their suppliers that they have appropriate and valid licences before purchasing. For further information see Module 15 – Buying and Selling Seeds.

Acknowledgements

Thanks to the following reviewers: Alexandra Wyatt, Amelia Martyn Yenson, Stephen Bell.

Online resources

Atlas of Living Australia
https://www.ala.org.au/

Florabase, The Western Australian Flora, by the Western Australian Herbarium, Biodiversity and Conservation Science, Department of Biodiversity, Conservation and Attractions
https://florabase.dpaw.wa.gov.au/

Flying-fox Camp Management Code of Practice
https://www.environment.nsw.gov.au/topics/animals-and-plants/wildlife-management/management-flying-foxes/camp-management/flying-fox-camp-management-code-of-practice#:~:text=Code%20of%20Practice-,Flying%2Dfox%20Camp%20Management%20Code%20of%20Practice,the%20welfare%20of%20flying%2Dfoxes.

Naturemap, mapping Western Australia's biodiversity
https://naturemap.dbca.wa.gov.au/

NSW BioNet database (NSW Department of Industry, Planning & Environment)
http://www.bionet.nsw.gov.au/

Revegetation Industry Association of Western Australia (RIAWA) Accreditation Program and Seed Purity Database
https://www.riawa.com.au/accreditation
https://www.riawa.com.au/accreditation/purity

References and further reading

Hancock N, Gibson-Roy P, Driver M, Broadhurst L (2020) The Australian Native Seed Sector Survey Report. Australian Network for Plant Conservation, Canberra.

León-Lobos P, Bustamante-Sánchez MA, Nelson CR, Alarcón D, Hasbún R, Way M, Pritchard H, Armesto JJ (2020) Lack of adequate seed supply is a major bottleneck for effective ecosystem restoration in Chile: Friendly amendment to Bannister et al. *Restoration Ecology.* **28(2),** 277-281**.**

Martyn Yenson AJ, Offord CA, Meagher PF, Auld T, Bush D, Coates DJ, Commander LE, Guja L, Norton S, Makinson RO, Stanley R, Walsh N, Wrigley D, Broadhurst L (Eds) (2021) 'Plant Germplasm Conservation in Australia: strategies and guidelines for developing, managing and utilising ex situ collections (3rd edn).' (Australian Network for Plant Conservation Inc: Canberra).

Offord CA, Meagher PF (2009) 'Plant germplasm conservation in Australia: strategies and guidelines for developing, managing and utilising ex situ collections (2nd edn).' (Australian Network for Plant Conservation Inc: Canberra).

Pedrini S, Dixon KW (2020) International principles and standards for native seeds in ecological restoration. *Restoration Ecology* **28(S3)**, S286-S303.