

A Guide to using Species Navigator

Based on the best available science, Florabank recommends that when selecting species and obtaining seed for your revegetation project you consider:

1. **taxonomy** (identify the correct species, subspecies or variety for your site),
2. **adaptation** (make sure that the seed comes from a site with similar climatic and environmental conditions to your planting site—*Species Navigator* is designed to help here),
3. **physical and genetic quality** (the seed must have high genetic diversity and be stored under optimal conditions— *Species Navigator* also has a seed collection advice component), and
4. **proximity of the seed source** (if all other conditions are met, collect seed locally).

Species Navigator is designed to help you find the information you need to select the best and most suitable seed for your revegetation project.

What can I do with *Species Navigator*?

There are many different things you can do with this tool.

1. **Select species to suit your region, climate or soil.** Find the species that are adapted to your region (bioregion or NRM region) and environment, then read a detailed fact sheet for seed collection advice. (Sections 1 and 2 of the key).
2. **Select species for a particular use such as timber, fodder, shelter or gardens.** If you have a particular purpose in mind, you can choose the species that are best suited to that purpose, within your region. (Section 4 of the key).
3. **Select species that are adapted to difficult conditions, extreme climates or adverse soils.** Do you have saline or highly acidic sites? What about species for frosty or drought-prone areas? Select species that will tolerate these conditions. (Section 3.2 and 3.3 of the key)
4. **Select species based on flowering or fruiting times.** Planning your seed collection schedule for the season? Find out what flowers in your region at a particular time of year and when seed can be collected. (Section 5 of the key).
5. **Select species based on germination temperature or seed pre-treatment.** Looking to treat your seed for direct seeding or nursery operations? Use the key to find species with similar treatment requirements. (Section 6 of the key).
6. **Select species based on potentially undesirable characteristics.** Some species can be weedy, can sucker and spread or be sensitive to fire or disease. Find out about these species before you plant them. (Section 3.4 of the key).
7. **Get the very best advice on seed collection for the plants and populations you have available.** In order to get the genetic diversity right, you need to collect from enough individuals from large healthy populations. The tool will help you decide which plant populations to collect from and which ones to avoid. (Section 7 of the key).
8. **Get detailed information about seed collection for individual species.** You can go straight to the fact sheets for each of the 300 species in the key

for detailed information about distribution of natural populations; flowering, seeding and germination times; uses and cultivation; and references for further information. (Choose the fact sheet icon next to each species name in the “entities” list).

How does the Species Navigator work?

Species Navigator has four windows on the main page.

In the top left window (called “Features available”) there is a list of all the characteristics you can choose to select your species or seed collection advice. Click

on the + symbols to expand the different section, or select the  (expand selected list) button to open up all sections. Then you simply click on the box next to the feature you wish to select.

You can also see an image for some of these features, such as a map of a region or link to a website where you will get the information you need. Just click on the image  or link  icon next to some features.

The bottom left window (called “Features chosen”) shows which features you have selected in the “Features available” window. This helps you keep track of your selections, but can also be used as a description of the features of your site, which you can then take to a nursery for further advice.

The top right window (called “Entities remaining”) shows the species (or seed collection advice) that fits the features you have selected in the “Features available” window. The more features you choose, the less you will see in this window. Be judicious in the number of features you select, as you will quickly eliminate everything from this window if you are too selective.

In this window, you will see a fact sheet icon next to each species. Click on this to open a fact sheet for that species.

The bottom right window (called “Entities discarded”) shows the species (or seed collection advice) that does not fit the features you have chosen in the “Features available” window.

An example.

In this example we will select species that are suitable for timber production on frosty sites in the New England Tableland bioregion, then open a fact sheet for one of these species.

Firstly, we open up the “1. Select taxa endemic to a specific region”, then “Based on IBRA regions”.

The screenshot displays the 'SPECIES AND PROVENANCE NAVIGATOR' software interface. At the top, there is a title bar and a menu bar with 'Key', 'Features', 'Entities', and 'View'. Below the menu bar is a toolbar with various icons for navigation and selection. The main interface is divided into two primary panels. The left panel, titled 'Features Available: 81', shows a hierarchical tree structure under the heading '1. SELECT TAXA ENDEMIC TO A SPECIFIC REGION'. This tree includes a sub-section 'Based on IBRA Regions' which lists Australian states and territories: New South Wales (includes ACT), Northern Territory, Queensland, South Australia, Tasmania, Victoria, and Western Australia. Below this is another sub-section 'Based on NRM regions (NAP priority regio)'. At the bottom of the left panel, it indicates 'Features Chosen: 0'. The right panel, titled 'Entities Remaining: 400', displays a list of species names, with 'Abelmoschatus moschatus' highlighted at the top. Other species listed include 'Acacia acinacea', 'Acacia acuminata', 'Acacia boormanii', 'Acacia dealbata', 'Acacia deanei', 'Acacia doratoxylon', 'Acacia fimbriata', 'Acacia hakeoides', 'Acacia implexa', 'Acacia leuoclada', and 'Acacia ligulata'. At the bottom of the right panel, it indicates 'Entities Discarded: 0'.

Secondly, we select “NSW” then tick the box for “NET New England Tableland”. As soon as we do this the “Entities remaining” window only has 167 taxa (out of an original 300 taxa). These are the species in the key which occur in the New England Tableland bioregion.

The screenshot displays the 'SPECIES AND PROVENANCE NAVIGATOR' software interface. The window title is 'SPECIES AND PROVENANCE NAVIGATOR'. The menu bar includes 'Key', 'Features', 'Entities', and 'View'. Below the menu bar is a toolbar with various icons for navigation and filtering.

The interface is divided into four main panels:

- Features Available: 81:** A tree view showing various bioregions. The 'NET New England Tableland' checkbox is checked and highlighted.
- Features Chosen: 1:** A tree view showing the selection process. Under the heading '1. SELECT TAXA ENDEMIC TO A SPECIFIC REGION?', the 'NET New England Tableland' checkbox is checked and highlighted.
- Entities Remaining: 78:** A list of 16 species names, including *Acacia dealbata*, *Acacia fimbriata*, *Acacia implexa*, *Acacia leuococlada*, *Acacia melanoxydon*, *Acacia rubida*, *Allocasuarina littoralis*, *Allocasuarina luehmannii*, *Allocasuarina torulosa*, *Atriplex semibaccata*, *Austrodanthonia caespitosa*, and *Austrodanthonia setacea*.
- Entities Discarded: 322:** A list of 10 species names, including *Abelmoschatus moschatus*, *Acacia acinacea*, *Acacia acuminata*, *Acacia boormanii*, *Acacia dealbata*, *Acacia deanei*, *Acacia doratoxydon*, *Acacia hakeoides*, and *Acacia implexa*.

Next we open section 4 “Select taxa based on uses?” and “Wood products”.

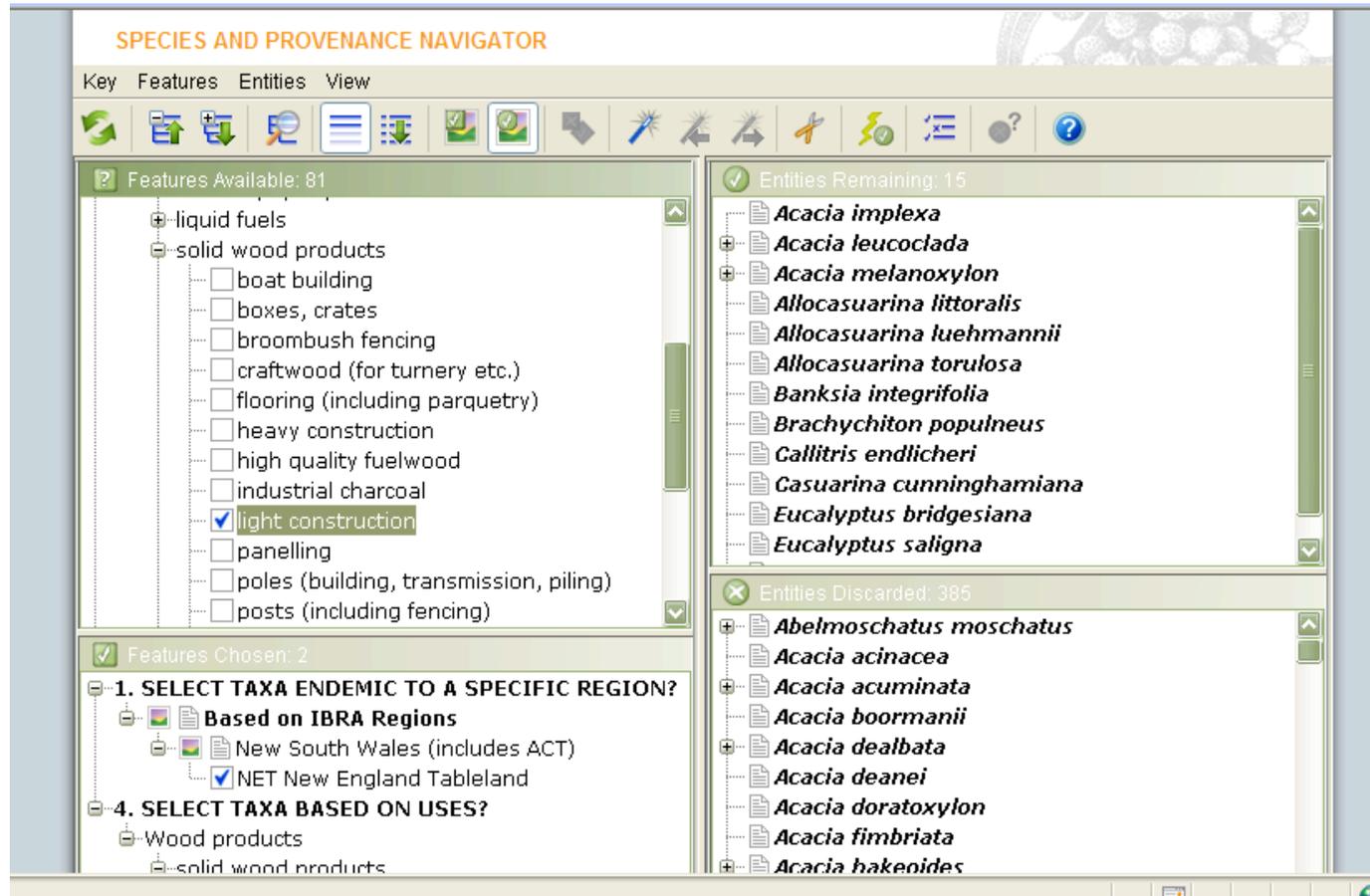
The screenshot displays the 'SPECIES AND PROVENANCE NAVIGATOR' software interface. The window title is 'SPECIES AND PROVENANCE NAVIGATOR'. The menu bar includes 'Key', 'Features', 'Entities', and 'View'. The toolbar contains various icons for navigation and selection.

The interface is divided into three main panels:

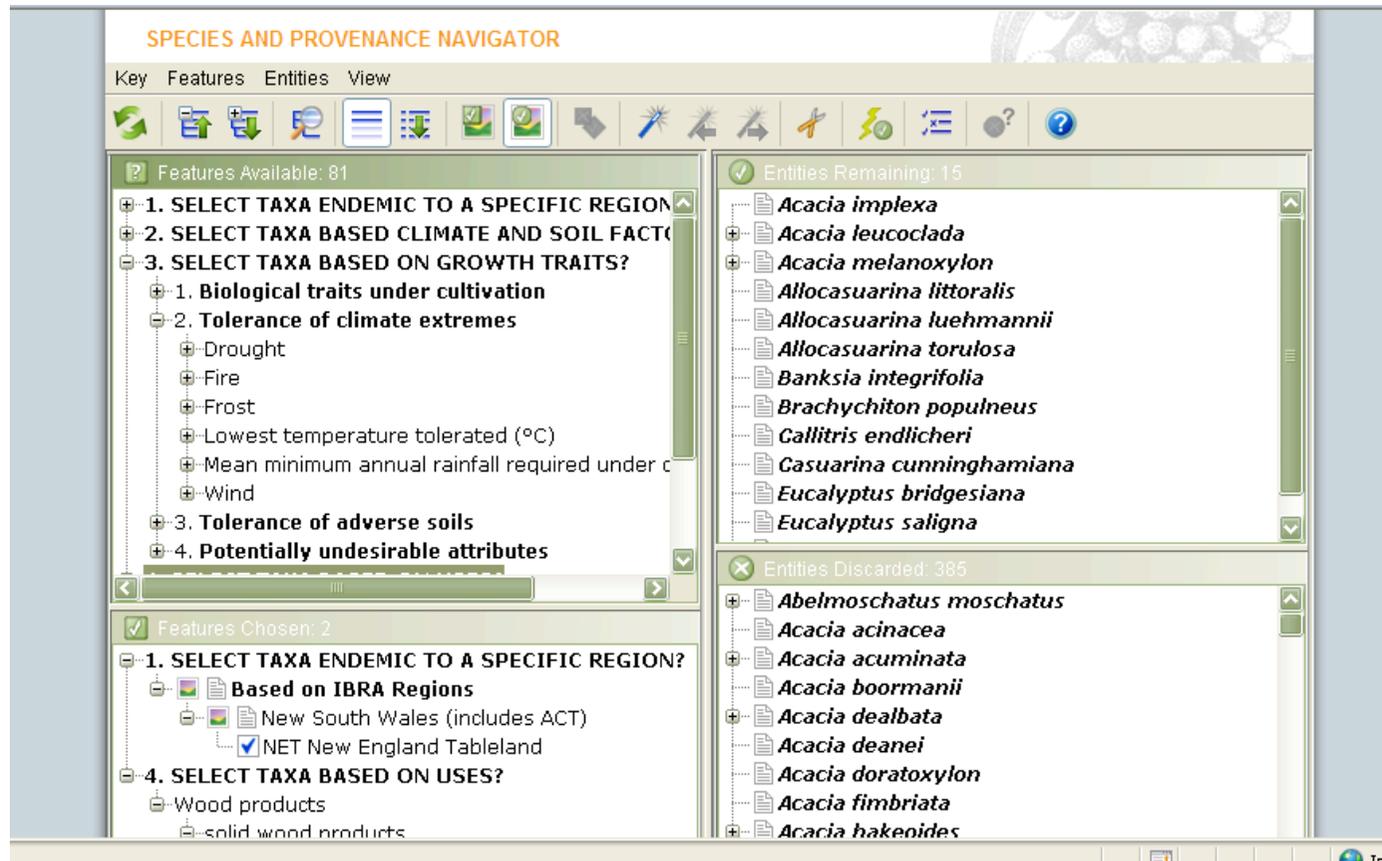
- Features Available: 81:** A tree view showing a selection process. Section 4, 'SELECT TAXA BASED ON USES?', is expanded. Under it, 'Wood products' is selected, and further expanded to show 'fibre or paper products', 'liquid fuels', and 'solid wood products'.
- Features Chosen: 1:** A tree view showing the selected feature: '1. SELECT TAXA ENDEMIC TO A SPECIFIC REGION?' expanded to 'Based on IBRA Regions', which is further expanded to 'NET New England Tableland'.
- Entities Remaining: 78:** A list of species names, including *Acacia dealbata*, *Acacia fimbriata*, *Acacia implexa*, *Acacia leucoclada*, *Acacia melanoxylon*, *Acacia rubida*, *Allocauarina littoralis*, *Allocauarina luehmannii*, *Allocauarina torulosa*, *Atriplex semibaccata*, *Austrodanthonia caespitosa*, and *Austrodanthonia setacea*.
- Entities Discarded: 322:** A list of species names, including *Abelmoschatus moschatus*, *Acacia acinacea*, *Acacia acuminata*, *Acacia boormanii*, *Acacia dealbata*, *Acacia deanei*, *Acacia doratoxylon*, *Acacia hakeoides*, and *Acacia implexa*.

The bottom right corner of the window shows a small globe icon and the text 'Inte'.

Then open “**Solid wood products**” and tick the box next to “**Light construction**”. You will see that immediately the “**Entities remaining**” window goes down to 15 species. The “**Features chosen**” window is now showing the two features we have selected so far.



Next we open section 3, “Select taxa based on growth traits?” then “Tolerance of climate extremes”.



Next select “Frost”, then tick the box next to “tolerates frosts in the 0°C to -5°C range.” Notice that in the Entities remaining window there are now only 10 species. These 10 species match the features chosen, which are now displayed in the bottom left, “Features chosen” window.

The screenshot displays the 'SPECIES AND PROVENANCE NAVIGATOR' software interface. The window title is 'SPECIES AND PROVENANCE NAVIGATOR' and it has tabs for 'Key', 'Features', 'Entities', and 'View'. A toolbar with various icons is located below the title bar.

The interface is divided into several panels:

- Features Available: 81:** A tree view showing hierarchical feature selection. The selected path is: 3. SELECT TAXA BASED ON GROWTH TRAITS? > 2. Tolerance of climate extremes > Frost > tolerates frosts in the 0° to -5°C range. Other features include: 1. Biological traits under cultivation, Drought, Fire, Lowest temperature tolerated (°C), Mean minimum annual rainfall required under cultivation (mm), and Wind.
- Features Chosen: 3:** A tree view showing the selected features: 1. SELECT TAXA ENDEMIC TO A SPECIFIC REGION? > Based on IBRA Regions > NET New England Tableland, and 3. SELECT TAXA BASED ON GROWTH TRAITS? > 2. Tolerance of climate extremes > Frost.
- Entities Remaining: 10:** A list of 10 species: *Acacia implexa*, *Acacia leucoclada*, *Acacia melanoxylon*, *Allocasuarina littoralis*, *Allocasuarina luehmannii*, *Allocasuarina torulosa*, *Callitris endlicheri*, *Eucalyptus bridgesiana*, and *Eucalyptus saligna*.
- Entities Discarded: 390:** A list of 390 discarded species, including *Abelmoschatus moschatus*, *Acacia acinacea*, *Acacia acuminata*, *Acacia boormanii*, *Acacia dealbata*, *Acacia deanei*, *Acacia doratoxylon*, *Acacia fimbriata*, and *Acacia hakeoides*.

The bottom right corner of the window shows a small globe icon and the text 'Inter'.

Warning on the use of some LUCID menu options when using *Species Navigator*

As mentioned above, to our knowledge *Species Navigator* is the first LUCID -based key to provide decision support for growing native plants based on their ecology, uses or biology. As such, many of the menu options in the LUCID software used to refine the segregation process of the taxa being identified, are not relevant options to use in *Species Navigator*. These include the options 'Allow Misinterpretations', 'Retain Uncertainties' and using 'Best' mode. Users will soon work out that applying these to the *Species Navigator* dataset that meaningless output will result.