How to Collect Kānuka Herbarium Specimens

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Introduction

Leptospermum plant in the wild.

Leptospermum specimen in collecting book.

Aotearoa has 10 different kinds of kānuka (*Kunzea* species), many of these were recognised by iwi long before European botanists paid them any attention.

Until the 1930s, iwi knew these plants by a range of names, the most universal of which was 'mānuka' (referring perhaps to the white wood of the various species). However, since 1930 that name has increasingly been used for what was until then known to Māori as kahikātoa – the various forms of *Leptospermum* so important these days for rongoā (mānuka honey, mānuka essential oil, etc).

Other names used by iwi for kānuka include 'rawiri' (used widely by Ngāti Porou according to William Colenso, and until recently still commonly heard in the rohe of Muriwhenua (Ngāi Takato, Ngāti Kurī, Ngāti Kahu, Te Rarawa and Te Aupōuri). Individual species we now recognise were also distinguished by Māori, including 'rawirinui' for *Kunzea robusta*, the largest species in the genus, 'rawiritoa' for *Kunzea amathicola*, and 'makahikatoa' for the upland *Kunzea serotina*. *Kunzea ericoides*, a northern South Island endemic species, was known to iwi around Golden Bay as 'manuoea'.

Kānuka as a name seems to have appeared around the same time as mānuka was adopted in preference to kahikātoa for forms of *Leptospermum*. No one is clear where the name kānuka comes from, or its exact meaning either; the name appeared in the early 1930s and was rapidly taken up in preference to mānuka as the generic name for *Kunzea*.

In 2014 the *Kunzea* of Aotearoa were formally split into 10 species, which are closely related. Collectively they comprise a complex of forms closely allied to but distinct from their counterparts in eastern Australia.

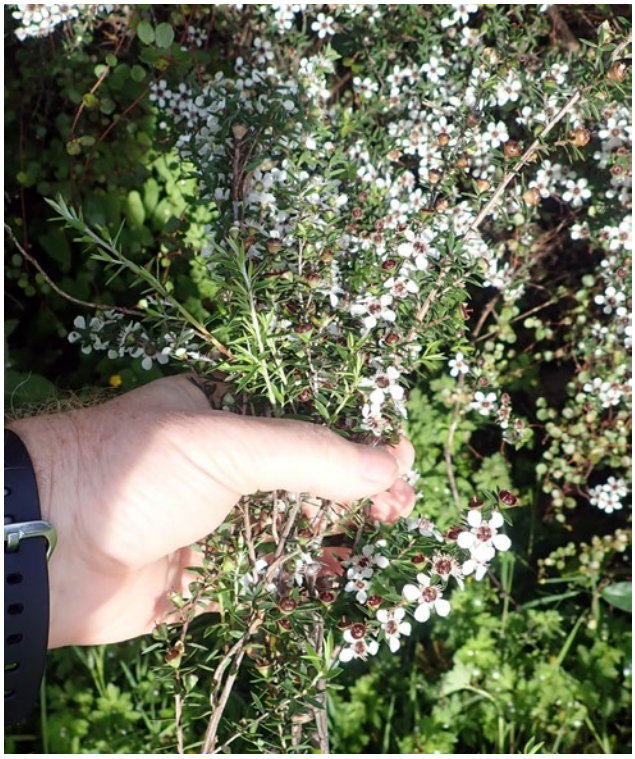
Species recognition can be tricky, requiring new growth, bark, capsules, and foliage. This guide provides some tips on how to collect kānuka specimens for accurate formal identification, using a simple technique pioneered by Mr Anthony Wright when he was curator at the Auckland Museum during the mid-1980s to early 1990s. (He is now Director of the Canterbury Museum.)

Field Collection

Taking the time to get a good collection and field notes of kānuka can save a lot of angst in the herbarium. The following tips will help you select a diagnostic specimen.

- Look for a vigorously growing, flowering specimen.
- Collect some flowering branches (if these have young vegetative growth, even better).
- Collect *generously* (unless you think the plant is uncommon/threatened).
- Collect some mature bark from the tree trunk.
- If you can find them, collect a few capsules (ideally ones attached to the branchlets).
- Take a good clear photograph of the growth habit (the form of the plant). Consider: does it have a tree form? are the branches erect or pendulous (weeping)? These are useful to show in your photo.

The images right of manuoea (*Kunzea ericoides*) show the growth habit of the tree (take a photograph to capture this) and what you need to collect to help with species identification: bark, mature foliage, young emerging foliage, flowers, and capsules (if you can find them).



Leptospermum specimen collected in the field.

Kunzea ericoides photos.

How Do I Preserve My Specimen in the Field?

Collecting plant material is one matter, but retaining it so that it forms a useful scientific specimen is quite another.

Diagnostic herbarium specimens should show the features than an expert will need to identify the species. To achieve this, a specimen needs to be dried quickly. The enemy of an herbarium specimen is moisture, humidity, lack of drying ventilation, and mould. Try not to collect wet specimens; if you have to collect wet plants, then dry them with a towel before pressing.

Ideally once a specimen has been collected, it is placed between absorbent paper, firmly and evenly pressed to help remove moisture, and then stored somewhere where warm, dry air can be pushed through the paper (like in a drying cabinet). Depending on the plant, the paper may need to be changed several times until the entire specimen is dry. The best way to tell if you plant is dry is to hold it up to your lips and gently press the specimen to your lips. If you feel warmth, your specimen is dry. If you feel some coolness, it is not yet dry enough.

However, you will be collecting in the field, probably without access to a plant press or drying cabinet. For these conditions, another technique is needed. This is especially so, because kānuka is a member of the Myrtaceae (myrtle family) and as is common in that family, the young growth and flowers wilt rapidly unless pressed. Putting them in plastic bags on a hot day can be a disaster, as the heat and humidity can speed up specimen deterioration. So don't do that!

The most effective way to collect plants in the field is to place them into 'collecting books'. These are any hardcover books with cheap, absorbent paper – remember those 'Boys Own Annuals' that were popular Christmas gifts from the 1950s to 1970s? That's what you want, and you can find them in second-hand bookshops, where they usually sell for a few dollars. You will also need an old car tyre inner tube, cut into thick rubber-band-like strips. For each collecting book you want at least two car tyre inner tube 'rubber bands'.

Place your specimens between the pages of the book, and then fasten the pages with the 'rubber bands'. These provide the initial pressure you need to start the drying process. Provided your freshly collected specimen is not too wet, specimens placed within 'collecting books' can be held there for several days or even months – but it really does depend on what you are collecting!

This technique can be used for field work just about anywhere and has the advantage of starting the drying process while in the field. This is important for delicate plants or structures that wilt rapidly once a plant is collected. It also reduces the time spent processing specimens when back at home, as your collections are already flattened and starting to dry.

A useful summary of the information provided can be found here: https://www.youtube.com/watch?v=l8HgjsUjC_w

Leptospermum ready for pressing.

Collecting Book and Tyre Straps.

Collecting book closed with specimens inside.

Recording Specimen Collection Details

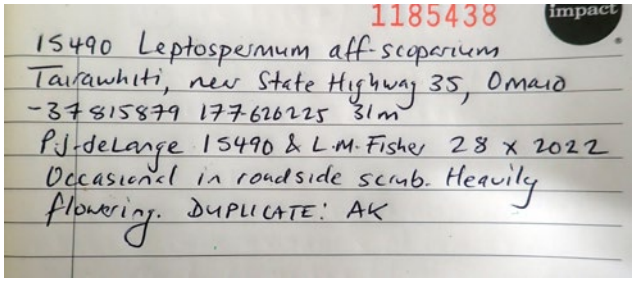
A specimen without the critical collection details is useless. Important information that you need to provide includes the exact location your specimen was collected from, latitude and longitude (expressed ideally as decimal degrees, e.g., -37.346643°S, 175.183479°E), altitude, the collector(s), and date of collection. Without that data your specimen cannot be lodged in an herbarium. (See the example of collection details on the next page.)

It is also useful to record information about the plant. Consider: what colour are the flowers? Flowers may change colour on drying. How big was the tree you collected from? Was it a shrub? Are the branches pendulous? This is information that is hard to see from an herbarium specimen in isolation.

Other useful notes are often ecological, i.e., what was your plant growing with? Ethnobotanical information is also useful, for some native plants we only know their iwi names because pioneering botanists put those on their labels.

Ultimately what you write is a personal choice. However, providing some context around your collection does help future researchers. Your collection may seem unremarkable to you, but 20 or more years from now it may prove to be extremely important. The more information you provide, the better!

Once you have collected your specimen, and made the necessary field notes to accompany it, your field work is complete. Your specimen is now ready for processing in an herbarium.



Close up of collection details that accompany an herbarium specimen sent in for processing. Notes provide the critical location details, latitude/longitude, altitude, the collectors, and notes about the ecology of the plant collected, in this case a potentially new species of kahikātoa (*Leptospermum*). The number 15490 is the collector's personal collecting number. Botanists use these to keep track of specimens, and some herbaria and scientific journals insist on their usage.

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