Research Report on the listing of Flora for Tarra-Bulga National Park (collected by Kara Healey & others), held at the National Herbarium of Victoria

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(Photo: "Pink Fungi", Craig Campbell)

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The source of the data and information residing in this Report is to be found in the database provided by the Royal Botanic Gardens Board, Melbourne, MELISR database, dated 17/02/2010.

Tarra-Bulga National Park, in the eastern Strzelecki Ranges of Gippsland (Victoria) is a unique area of preserved Cool Temperate Rainforest and Wet Sclerophyll Forest representative of the once vast Strzelecki forest areas. Originally two separate parks (Bulga Park proclaimed in 1904 – 50 acres – and Tarra Valley Park in 1909 – 155 acres) they were physically joined together in 1991 and now create a National Park of over 2000 hectares. In September 2009 the Friends of Tarra-Bulga National Park celebrated the centenary of the Tarra Valley section of the Park by unveiling a plaque commemorating the life and work of Kara Healey, former Caretaker (Ranger) of the Park. As a result of Kara's diligence and commitment (while Caretaker) many specimens of flora within the Tarra Valley area were collected. It was understood that the various specimens were sent to the University of Melbourne, the Commonwealth Scientific & Industrial Research Organisation (CSIRO) Division of Forest Products in Melbourne, National Museum (Melbourne) and the National Herbarium of Victoria for full identification and storage. However, the Park records and Friends group had no evidence of what still existed, and the extent, of Kara's collection at the time of the Centenary events. On the initiative of the Friends group enquiries were sent to each organisation to track down what existed of Kara's floral materials.

A database of over 1,400 items was the result of the enquiry to the National Herbarium of Victoria for any information on the work of Kara Healey, who lived and worked at Tarra Valley National Park from October 1951 to May 1963. While the database lists all botanical items that Kara sent to the National Herbarium of Victoria, it had now also been merged by items sent by Kara to the CSIRO Division of Forest Products Herbarium (that were later transferred to the National Herbarium of Victoria, in total, in May 2000), as well as any items collected by the National Herbarium of Victoria that had a connection with the name 'Tarra'. Consequently, items that were collected on the Tarra River downstream of the Park, near Tarraville, or made mention of the Park in any way, are part of the database. No materials were found in the other locations.

What has previously been known of Kara is that she had collected a range of items – particularly ferns, grasses, mosses, lichens and fungi – as well as invertebrates. Over the years figures have been quoted of Kara collecting 160 types of toadstool, and more than 80 types of mosses, as has the significance of her work in discovering two new types of fungi, both of which were named after her – *Poria healeyi* and *Lambertella healeyi*. No records of her botanical collecting were gained from the National Museum of Victoria, University of Melbourne or the CSIRO (having been transferred from there to the National Herbarium of Victoria in 2000). This Report aims to provide insight into the botanical records that have been provided by the National Herbarium of Victoria pertaining to Tarra-Bulga National Park, and in particular to the collection of Kara Healey, in order to update the Park listings of flora.

Overview of the database

The database records 1,471 individual items that have a connection with 'Tarra'. There are 107 items that pertain to the "Gippsland Plain" origin of the items – whether Yarram, Tarra River floodplain, Nooramunga Wildlife Reserve or somewhere between Tarra-Bulga National Park and Morwell (given as Traralgon South as the compromise position). Mention is also made of Binns Hill Junction (3 items), the Grand Ridge Road (1 item), Albert River (1 item), somewhere between Tarra Valley and Calder Junction (6 items), a Reserve opposite Tarra Valley National Park (4 items), and 2 items from the River SE of Tarra Valley National Park.

These records account for some 8.4% of the total records within the database, a small amount considering the size of the database.

In summary, the database records can be shown as indicated in Table 1 (below):

Table 1: "Tarra" National Herbarium of Victoria Collection

	Botanical Groups	Number of Specimens	Number of Species
Vascular Plants	Ferns	14	12
	Conifers etc	0	0
	Monocotyledons	12	11
	Dicotyledons	60	51
	Total (Vascular)	*86 (5.8%)*	*74 (12.9%)*
Non-vascular Plants	Algae	13	6
	Mosses & Liverworts	343	142
	Fungi	986	329
	Lichens	43	21
	Total (Non-vascular)	*1385 (94.2%)*	*498 (87.1%)*
Grand Total	***(Vascular + Non-vascular)***	***1471***	***572***

The remarkable nature of this database is that it is dominated by the non-vascular plants. While most commentaries on botanical listings for geographical areas focus on the vascular plants, there is only a small percentage reflected in this record for the Tarra Valley area (approximately 6% of the individual specimens, and 13% of the species listed). As Table 1 indicates, most of the vascular items are single records of species collected (with only several species having multiple records); while the non-vascular records indicate that multiple items exist for many species. This reflects the comprehensiveness of Kara's work in collecting over many years (although not all records are of Kara's collections). The data also indicates that Kara only collected from the Tarra Valley area - near her home or somewhere in the Tarra Valley National Park. No records exist of Kara having collected in any other location. Besides the aforementioned collections from areas other than the Park (107 items that make up 8.4% of the total), there are only 80 specimens that the database records give that are known to have been collected from Bulga National Park – 45 Mosses, 33 Liverworts, a fungus and a fern (5.4% of the total collection) – by persons other than Kara Healey. Table 2 indicates the size of the collection that can be attributed to the work of Kara Healey over her 11 ½ years living in Tarra Valley.

Table 2: Kara Healey Collection

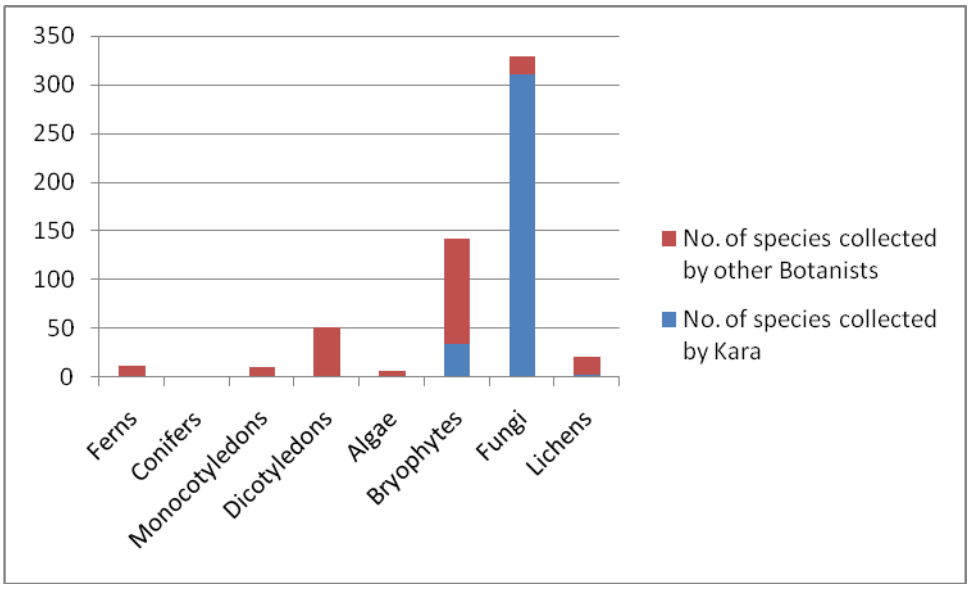
	Botanical Groups	Number of Specimens	Number of Species
Vascular Plants	Ferns	1	1
	Conifers etc.	0	0
	Monocotyledons	0	0
	Dicotyledons	1	1
	Total (Vascular)	*2 (0.2%)*	*2 (0.6%)*
Non-vascular Plants	Algae	0	0
	Mosses & Liverworts	43	33

The source of the data and information residing in this Report is to be found in the database provided by the Royal Botanic Gardens Board, Melbourne, MELISR database, dated 17/02/2010.

	Fungi	918	310
	Lichens	2	2
	Total (Non-vascular)	*963 (99.8%)*	*345 (99.4%)*
Grand Total	***(Vascular + Non-vascular)***	***965***	***347***
	% of "Tarra" Collection	***65.6%***	***60.7%***

Graph 1 (below) indicates the proportion of species collected by Kara in relation to all other collectors.

Graph 1 – Number of Species collected by Kara and other collectors



In view of the fact that no other records of Kara's botanical collecting are known (having come to dead-ends in requests from the CSIRO, Natural Museum of Victoria and the University of Melbourne), the data in Table 2 and Graph 1 indicates that there are a sizeable number of items attributed to Kara's collecting. It is dominated by the fungi that Kara is so well known for, and also supports her interest in the non-vascular plants. However, the record does dispel the 'myth' of what was attributed to Kara. On one hand, the collection of only 43 specimens (33 species) of the Bryophytes (Mosses & Liverworts) is well short of the understood belief of 'more than 80 types of mosses' while, on the other hand, the fungal collection is well in excess of the story given (918 specimens – 310 species compared to '160 types of toadstool'). Historical comments regarding Kara collecting ferns, grasses and lichens are mostly supported by the fact that several records do exist for the Ferns and Dicotyledons (although smaller than what might have been thought), but no records are given for Kara having collected the 'grasses'. Overall, the data is far in excess of what was originally anticipated and what history may tell us. Other collectors have come into the Tarra Valley area and taken specimens that are now residing in the National Herbarium of Victoria and recorded within the database*. I will go on to examine the National Herbarium of Victoria database in more detail.

* For information on the other botanical collectors (for all types of plants recorded in the database) see Appendix 1.

Vascular Plants

Pteridophytes (Ferns & related plants)

A mere 1% of the database records are related to the Pteridophytes (14 specimens covering 12 species in total), despite their predominance in the visual aspects of the Park area. Only one of these specimens was collected by Kara, with 5 species recorded as having been collected from Tarra Valley (the rest being from Binns Hill, a 'reserve opposite Tarra Valley' and Nooramunga). The collectors (other than Kara) were B.D. Duncan, G. Isaac, T.S. Henshall and A.C. Beauglehole. The plant records given (from Tarra Valley) equate with species already known from within the Park area and currently exist on the Park listings, with one minor variation. B.D. Duncan collected a subspecies of the Weeping Spleenwort - *Asplenium flaccidum ssp. flaccidum* – known to exist within the Park. Should this be added to the Park listings* as a separate recording or not?

The other area of interest is with the specimen that Kara herself collected – the Skirted Tree Fern (*Cyathea x marcescens*). It is of interest due to the description given for the area in which Kara collected the item (on 22/6/1953) as noted when the specimen was entered into the National Herbarium of Victoria records:

Although not nearly as numerous as the soft tree fern, rough tree fern and slender tree fern, it [Cyathea x marcescens] is not just an isolated specimen. Without going more than a few yards off the made tracks, I have counted more than 50 of these ferns and I think this is a small estimate of the number of this type throughout the bush, as we have only a mile of track in an area of c. 260 acres. It is not likely that these ferns will be destroyed by fire as the gullies are always cool and damp and being in the National Park they are already protected against clearing. [Copy of letter from collector to J.H. Willis, dated 12 July 1953, is attached to sheet.]

*'Park listings' refer to the printed lists of flora & fauna that are available currently to the Public from the Park Office. Further listings of the updated naming of species have been referred to, as provided by Park Ranger Craig Campbell in personal correspondence to himself from A.W. Thies, B. Fuhrer and Latrobe Valley Field Naturalists (see References).

Gymnosperms (Conifers & related plants)

No records of gymnosperms (or related plants) are to be found in the National Herbarium of Victoria "Tarra" database or from within the botanical listings for Tarra-Bulga National Park.

Angiosperms (Flowering Plants) – Monocotyledons

While the Monocotyledon listing for Tarra-Bulga National Park is poor, the same can be said for the "Tarra" database. Twelve specimens covering 11 species are recorded (less than 1% of the database). None of the specimens were collected by Kara, with most items (7) collected by A.C. Beauglehole and 2 by F. Mueller. Most specimens are found outside the Park area (Tarra River & its floodplain, Nooramunga, and somewhere "between the Albert & Tara [sic] Rivers"). The one specimen found within the Park boundary that is recorded in the database is of note. It was collected by N.G. Walsh on 31/1/1992 – *Uncinia sp B (aff. silvestris),* a type of Hook-sedge – which is not currently recorded in the botanical listings for Tarra-Bulga National Park. Walsh described this plant as "uncommon" and a "slender, dark-green tussock c. 10 cm diameter at base". It is to be found on the "Tarra Valley Rainforest Walk, beside [the] headwater of Tarra River and against [the] walking track" in an area that is a "*Nothofagus-Atherosperma* closed forest with

Dicksonia antarctica, Cyathea cunninghamii etc.". This particular species should be added to the listing of Monocotyledons for the Park. It may be possible to find the original site for this specimen and confirm that it is indeed a record for the Park given the description and the recent date provided.

Angiosperms (Flowering Plants) – Dicotyledons

The Dicotyledon record within the "Tarra" database is much more comprehensive, as would be expected. There are 60 individual records of 51 species (4.1% of the database). While Kara only collected one item from the listings, major collectors of whom there are records include: A.C. Beauglehole (18 specimens), J.J. Ackland (13), F.J. Breteler (5), A.W. Howitt (4), F. Mueller (3) and S.H & E.L. Lewis (2). Once again, a number of the items listed fall outside the area of the Park – Nooramunga, Tarra River & its floodplain, Won Wron, Tarraville and 'between Sale & Tarraville'. There is even mention of a Tarra Range somewhere over near Mallacoota/Buchan area that could be a confusion of an unclear site record for one specimen!

Kara collected a specimen of *Tasmannia lanceolata* (Mountain Pepper) on 25/2/1960 having been fascinated by the change in colour of the berries as she makes comment about this in the notes attached to the specimen. This species is already well-known from the Park record. However, there is a record for *Eucalyptus viminalis ssp. indet,* having been collected at Tarra Range by A.W. Howitt (date not given – but probably in the late 19th century). While this could only refer to Tarra Valley in some way, there is the question of confusion that exists in location by another specimen collected by another person that makes some reference to Buchan & Mallacoota from around the same period of time (J. Cameron 03/1889) that is recorded in the database. As there is not the accuracy in this time period as there is today in pin-pointing exact locations of specimens, one can only be left wondering if this is a true record for the Park. *E. viminalis* is certainly known from other areas of the Strzelecki Ranges and so we will need to be vigilant in order to determine if this is a true record or not.

J. Cameron's specimen of 03/1889 is actually the Red Passion-flower *Passiflora cinnabarina* (a new record, if the location is determined to be truly from Tarra Valley). The database also acknowledges the presence of another related species *P. tarminiana* to be found just SE of the Park area (recorded 30/4/1998 by S.H & E.L Lewis). As neither of these species currently exists in the Park records, it is again a case of being aware that these species exist (possibly) nearby and to note if there is a positive sighting when working in these areas.

Mention should also be made to *Fuchsia magellanica* found along the Tarra River extending for at least a mile on both sides, as noted by K. Harris (19/1/1986) and S.H. & E.L. Lewis (30/4/1998). It is still a problem along the River, with the West Gippsland Catchment Management Authority continuing to work to clear this garden escapee and other weeds from the River. A quick check of the Park records shows that this particular species is not recorded for the Park, and yet is so obviously so. Should a garden escapee such as this be added?

Finally, an interesting sample is that of *Zieria arborescens ssp. arborescens* that has been collected by F.J Breteler on 23/10/1989 in Tarra Valley NP Forest [sic]. While Stinkwood (common name for *Z. arborescens*) is commonly known for the Park, this is interesting in referencing a sub-species. As for the Weeping Spleenwort example (see earlier), should we update our records or determine if this is the more accurate version of what is to be found in the area?

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In summary, for the vascular plants, there is only one definite addition to the Park records –the monocotyledon *Uncinia sp B (aff. silvestris),* a type of Hook-sedge - with several other specimens yet to be confirmed as positive records. The listing of several (new) sub-species, and a garden escapee, for the Park is to be considered, upon further investigation.

Non-vascular Plants

Algae

At present there are no records of algae for Tarra-Bulga National Park, and there has been no attempt to collect records in this area. Any listing that is for the Park area could form the basis of the commencement of a Listing, and for a future Friends project.

The "Tarra" database of 13 specimens (representing 6 species), covers a mere 0.9% of the overall database. All specimens were collected from the Tarra River area in April 1998 by S.H. & E.L. Lewis. While local knowledge will determine the exact location of the sites used for collecting algae, there is only one clear record that is from within the Park boundary - *Batrachospermum antipodites* (a Rhodophyte – red algae). This specimen was collected from the Tarra River above the Tarra Valley Car park area. This alga should be listed for the Park, and local knowledge sought so that maybe other algae can be listed. The use of GPS for some of the specimens collected by the Lewis team will assist in following up the sites and thus listing in the Park records.

Bryophytes (Mosses & Liverworts)

While the mosses and liverworts are seemingly insignificant simple plants there is a large listing of these on the Park record. As with many smaller organisms, little is often known about them, and they can often be overlooked by many botanists. It therefore relies upon a few 'experts' to organise, collate and classify these plants. This can lead to many errors, oversights or misunderstandings. Name changes can become quite common as information is gained, and this is reflected in some of the materials that form this section of the database. Also, identification down to the generic and/or species level can be difficult at times too. From the database, there can be found nearly a quarter (23.3%) of the records designated as Bryophytes. A total of 343 specimens covering 142 species is given, with a predominance of mosses over the liverworts (Mosses = 229 items (91 species), Liverworts = 114 items (51 species)). However, in keeping with Kara's interest in many of the more unusual areas, the rate is reversed for her items collected (Mosses = 11 items of 11 species, Liverworts = 32 items of 22 species). In total Kara collected 43 specimens of 33 species of Bryophyte. Other persons responsible for collecting Bryophytes that were added to the database include A.W. Thies (145 specimens), I.G. Stone (102 specimens), and the Rev. A. Thomas (18 specimens). Firstly, I will look at the Liverwort collection and then go on to the Mosses.

Bryophytes – Liverworts

Many of the specimens collected by Kara appear to be new listings for the Park, as the bulk of the species listed have been collated by A.W. Thies. Specimens collected by other interested parties also form some of the new listings that are to be registered for the Park. Nearly all the specimens have been collected from Tarra Valley area with a mere 33 (out of the 114 Liverworts collected) collected from Bulga park area,

making up just over 40% of the materials collected from Bulga Park for the entire database. The following items are new records for the Park (Kara's name appears in parentheses for specimens that she was responsible for collecting an item): *Riccardia colensoi* (Kara), *Riccardia wattsiana* (Kara), *Megaceros flagellaris, Frullania deplanata* (Kara), *Frullania probosciphora* (Kara), *Chiloscyphus bispinosus* (Kara), *Chiloscyphus latifolius* (Kara), *Cyanolophocolea echinella* (found in Bulga Park), *Heteroscyphus coalitus* (found in Bulga Park), *Heteroscyphus fissistipus* (Kara collected one of the 2 specimens listed), *Heteroscyphus triacanthus* (found in Bulga Park), *Leptophyllopsis laxa* (Kara), *Bazzania adnexa* (Kara collected one of the 8 specimens listed, found in both Bulga & Tarra Valley), *Kurzia hippurioides* (found in both Bulga & Tarra Valley), *Telaranea capilligera* (Kara collected one of the 3 specimens listed), *Telaranea herzogii* (Kara collected one of the 3 specimens listed, found in both Bulga & Tarra Valley), *Telaranea mooreana* and *Symphyogyna podophylla*. A total of 18 new species can be added to the Park listings. Common names are rarely known for the various liverworts, so a more easily recognised name cannot be given.

Due to the lack of research on Liverworts in the 1950s and 1960s a number of items were passed on to experts elsewhere to assist in the identification process – in particular Mrs E.A. Hodgson - who was also responsible for the naming and description of several new species of Liverworts. On other occasions, specimens were observed for the purpose of setting up a 'Hepatic Reference Set' for Australia, or as part of the "Flora of Australia" series. Outside organisations have also shown an interest in the specimens collected that form part of the National Herbarium of Victoria, with financial support given towards the curation of specimens – in particular the support of ANNAMILA PTY LTD & ELISABETH MURDOCH TRUST is noted for several of the liverworts including some specimens collected by Kara.

As Liverworts are small plants sometimes a specimen was (mistakenly) reported as a single species, but in reality may actually have been made up of at least 2 different species on closer examination. One example of this is a specimen of *Chiloscyphus bispinosus* collected by Kara in 1961 (no exact date is given). The material was viewed at the National Herbarium of Victoria, sent to Mrs E.A. Hodgson (26/3/1963) for closer observation, and later confirmed in its identification by A.W. Thies on 4/1/1999. However, the National Herbarium of Victoria noted that this specimen also contained another liverwort, *Temnoma palmatum*, which is not on the Park records or in the database as an actual specimen collected and identified for the purpose of listing for the Park. In this case the specimen is of high interest as it is not very common (found only from a few sites in NSW, ACT, Victoria & Macquarie Island!). The sites known for this item in Victoria are Lankey Plain, Rocky Plains (SE of Mt Cobberas) and Splitter's Creek in East Gippsland. However, as it is only a reference note the National Herbarium of Victoria's view is that before we list this species for the Park the actual specimen would have to be viewed by a Bryologist in order to verify the record (pers. comm.). In my opinion we could list the specimen as an "Unconfirmed listing" in order to keep record of this reference note. It may well be worth enlisting the support of A.W. Thies in viewing this actual specimen to determine if there is a positive identification for *Temnoma palmatum*. A.W. Thies is still active in the field and has been known to have recently had contact with Ranger Craig Campbell.

Bryophytes – Mosses

Mosses are the more commonly recognised Bryophytes known to people. Like the Liverworts, their size makes them less well-known in botanical terms and open to more research needed to clarify their taxonomy. This becomes more apparent as we look into the database. There are 45 out of the 229 items collected that come from Bulga, (56% of the entire Bulga collection). While Kara collected very few Mosses,

most specimens listed were collected by A.W. Thies and I.G. Stone, mainly in Tarra Valley. Some specimens recorded are from outside the Park area (mainly from somewhere between Tarra Valley to Morwell, or between Tarra Valley and Calder Junction). These items are excluded from the final results. The following items are new records for the Park (Kara's name appears in parentheses when she was responsible for collecting an item): *Platyhypnidium austrinum, Pseudoscleropodium purum, Rhynchostegium muriculatum* (found in Bulga Park), *Sauloma tenella* (Kara), *Fissidens bifrons* (Kara), *Fissidens curvatus var. curvatus* (found in both Bulga & Tarra Valley), *Fissidens tenellus, Calyptrochaeta apiculata* (?),*Distichophyllum pulchellum, Distichophyllum rotundifolium, Isopterygium limatum* (found in Bulga Park), *Hypnodendron spininervium subsp. archeri* (Park listing already has the specific name, but this record is a sub-species), *Hypnodendron vitiense subsp. austral* (Park listing already has this specific name, but this record is a sub-species), *Hypopterygium didictyon, Hypopterygium rotulatum* (?),*Camptochaete arbuscula var. arbuscula* (found in both Bulga & Tarra Valley), *Fallaciella gracilis, Lembophyllum clandestinum* (found in both Bulga & Tarra Valley), *Campylopus clavatus* (also moved to a new Family from that listed in Park listing), *Campylopus flindersii** (also moved to a new Family from that listed in Park listing – found in Bulga Park), *Pohlia wahlenbergii, Orthodontium lineare, Barbula crinite, Tetraphidopsis pusilla#, Racopilum cuspidigerum var. convolutaceum, Leptotheca gaudichaudii* (found in both Bulga & Tarra Valley), *Pyrrhobryum bifarium#, Thuidiopsis furfurosa* (found in both Bulga & Tarra Valley), and *Thuidiopsis sparsa*. One other change noted is that the rare *Trachyloma planifolium*, already listed for the Park, has now been put into its own unique family.

A total of 29 new listings are given for the Park, although the confusion around some names, membership of a particular family and possible name changes are all factors that could reduce this number of new listings in time. For a few of the species that we already have listed on the Park records a more accurate version is identified (whether a sub-species, or a variety) in the database. This raises the accuracy of the Park listings, or the original identification. To sort this out I believe we need to make use of an expert like A.W. Thies as mentioned for the Liverworts. A number of these specimens have again been examined for inclusion in the 'J.H. Willis Australian Reference Set' and for the Flora of Australia Project. Several items have microscopic slides or photographs included with the specimen. While I.G. Stone has collected a number of these specimens, assisting to provide identification, at times the National Herbarium of Victoria have taken the notes from her (Red) Field Diary to determine the scientific name of the moss (especially down to species level). Unfortunately, at times, I.G. Stone has not been accurate in recording the exact location for collection of specimens in the database, resulting in the exclusion of some listings from the Park Records. The comments made about Liverworts also apply here in relation to mixtures of species, common names, and the support of other persons and organisations.

> **Campylopus flindersii* (Swan-neck Moss) is listed on the Advisory List of Rare or Threatened Plants in Victoria (2005) as 'Poorly known in Victoria'.
> #*Tetraphidopsis pusilla* (Arc Moss) and *Pyrrhobryum bifarium* (Umbrella Thyme-Moss) are listed on the Advisory List of Rare or Threatened Plants in Victoria (2005) as 'Vulnerable'.

Fungi

Like so many of the other smaller plants covered, the world of Fungi is yet to be fully explored, with much detailed analysis awaiting those interested in this area. The issues outlined in the Bryophytes are just as relevant for the Fungi, if not more so, due to the poor understanding of fungi as living organisms that play a vital role in the ecosystem. Kara, on the other hand, responded to the CSIRO request for Field Workers to

collect Fungi for the Department of Forest Products. She did this field work diligently for most of the time she was residing within Tarra Valley. The first specimens collected by Kara were in May 1953, and collection continued consistently until the last record on 4/3/1963, a period just short of 10 years.

In total there are 986 specimens of 329 species recorded in the database. The majority of these were collected by Kara (918 specimens in total), with N.E.M. Walters (15 specimens), S. Miller (13 specimens), J.H. Willis (4 specimens) and H.A. Morrison (3 specimens) contributing to the database. A further 23 specimens are labelled as being 'collected' by "Unknown". In fact, these particular items were collected by Kara, but were then used for cultivation purposes in the laboratory, to observe the growth habits and forms within a Petri Dish environment, to assist in the identification process. In effect these are cultivated versions of the field growth forms. Except for a few items that are designated "Tarra Bulga National Park" (from more recent collectors), or the sole item that designates "Bulga Park", all items were collected in the Tarra Valley area.

Fungi are grouped into 4 main groups within the Database – Deuteromycetes, Myxomycetes, Basidiomycetes, and Ascomycetes. I will consider each of these fungal groups in turn.

Fungi - Deuteromycetes

The Deuteromycetes or Imperfect fungi are those where no known sexual reproduction has been observed. It includes pathogens of agricultural crops, ringworm, tinea, and useful fungi such as those involved in cheese, enzyme or antibiotic production. There are no fungi of this type listed yet for the Park, and so any that are listed that are found within the Park area can be safely listed as new records for listing. The database lists only 6 specimens, of which Kara has collected 5 (of 5 species), with the final one being collected by B. Thompson of the Latrobe Valley Field Naturalists on a field excursion to the Park on 23/7/1994. The final listing of new species to include in the Park listing is (Kara's name appears in parentheses when she was responsible for collecting an item): *Gonytrichum sp* (Kara), *Isaria sp* (Kara), *Nodulisporium umbrinum* (Kara) and *Paecilomyces tenuipes.* Of the other 2 specimens listed in the database only one can be included (*?Verticicladium sp* (Kara)) although it has question marks about its identification and so should be listed as "Unconfirmed identifications". Again, we could look to a fungal expert (mycologist – e.g. Bruce Fuhrer) to examine these specimens to assist in formally identifying them for listing.

Fungi – Myxomycetes

Slime Moulds, or Myxomycetes, currently only have 2 species listed for the Park. The database, however, lists 11 specimens of a range of different species although in most cases formal identification has not been possible beyond what currently exists in the Park listing. All the specimens were collected by Kara but no new records exist for the Park beyond what we currently have on record.

Fungi – Ascomycetes

Despite the scientific nature of the naming of each species, the Ascomycetes include some interesting and well-known fungi including the Cup (or Sac) Fungi, moulds & mildews, morels, truffles, Vegetable Caterpillars, some pathogens of agricultural & domestic plants, and Yeasts etc. Some 96 specimens are recorded (covering 51 species), of which Kara collected 87 specimens (49 species). The other person who features in the collection of the Ascomycetes is N.E.M. Walters who collected 4 specimens. In fact, this is where it becomes apparent that Kara on occasions did not work alone. There appears to be one occasion

on record where a Field Trip was organised involving N.E.M. Walters, E.W.B. da Costa and Kara collecting fungi over several days (13/5/1955 to 15/5/1955). The records for the three days of field work are generally recorded as belonging to all 3, however, N.E.M. Walters has had some specimens tagged to himself only. The following species have been determined as new records for the Park (Kara's name appears in parentheses when she was responsible for collecting an item): *Annulohypoxylon bovei var bovei* (Kara & her 2 friends), *Annulohypoxylon hians* (Kara), *Annulohypoxylon stygium var stygium* (Kara), *Biscogniauxia nummularia* (Kara), *Ceratocystis sp* (Kara), *Coccomyces globosus* (collected by P.R. Johnston who first described this species), *Cordyceps gunnii* (Kara – should have been on the original listing for the Park – an oversight?), *Corynelia sp* (Kara), *Helvella sp* (Kara), *Hypoxylon archeri* (Kara), *Hypoxylon howeanum* (Kara & her 2 friends), *Hypoxylon hypomiltum var hypomiltum* (Kara & her 2 friends), *Hypoxylon rubiginosum* (Kara), *Hypoxylon rubiginosum var. microsporum* (Kara), *Leotia sp nov* (Kara), *Nectria macrostoma* (Kara), *Nectria vilior* (Kara), *Pezizella sp* (Kara), *Plectania campylospora* (Kara), *Rhynchonectria sp* (Kara), *Scutellinia scutellata* (Kara), *Xylaria hypoxylon* (Kara), *Xylaria sp nov* (specimen collected by Kara & then cultivated). A total of 23 new species are to be added to the Park listings. Interestingly, there are 2 new undescribed species in this listing – designated as *sp nov* – both of which Kara collected. Furthermore, there is no mention of *Lambertella healeyi* in the database, despite it being such a well-known part of the Kara story. In raising this with the National Herbarium of Victoria the response was that they thought that *L. corni-maris* (on the new listings) is actually the name allocated for 'Kara's' species – there being no record anywhere of the description of *L. healeyi* having been published in the scientific journals (pers. comm.). The fungus being named after Kara came about from correspondence with a Fulbright Research Professor (Richard P. Kopf) at Yokohama National University (Japan) who held a specimen in the University Herbarium under the temporary name of *L. healeyi n. sp. pro tem.* as he could not find any other matching species in the research available at that time (Catrice, 2010). As such, it identified the new species with a temporary name but was not to be realized as it was (apparently) never officially published.

Fungi – Basidiomycetes

The most obvious and common of fungi are the Basidiomycetes made up of the gilled fungi, pore-fungi, coral & club fungi, puffballs, underground fungi, spine fungi, shelf-fungi and jelly fungi. These are the most interesting to most people and no doubt gained Kara's attention as she collected mostly specimens of the Basidiomycetes, and is the largest part of the "Tarra" database. A total of 873 items exist in the database (making up 268 species). Kara collected some 815 items (252 species), with 22 specimens (of 17 species) being cultivated within the laboratory. Other collectors include: N.E.M. Walters (11 specimens of 10 species), S. Miller (13 specimens of 7 species), J.H. Willis (4 specimens of 4 species) and H.A. Morrison (2 specimens of 2 species). Some 69 specimens (of 38 or 39 species) that Kara collected were not able to be formally identified, as was one specimen collected by J.H. Willis. In comparing the database listings with the currently available Park listings for Basidiomycetes, there is an enormous list of new species to be added to the record. As for previous listings the proposed new species to be added to the record are (Kara's name appears in parentheses when she was responsible for collecting an item):

<u>Agarics (simple Gilled fungi)</u> - *Conchomyces bursiformis* (Kara), *Psathyrella echinata* (collected by H.A. Morrison), *Resupinatus poriaeformis* (Kara), and *Russula foetens* (collected by S. Miller).

<u>Agarics (forked Gilled fungi)</u> - *Tapinella panuoides* (Kara & her 2 colleagues).

Boletes (Fleshy Pore-fungi) – *Fistulina spiculifera* (Kara) and *Solenia australiensis* (Kara – this is the Holotype specimen – the actual specimen used for the first description & naming of a new species, and is written up in the journal Beih. Sydowia 4: 18 (1961). This is something we did not know about Kara's work!).

NOTE on *Solenia*: See also "unconfirmed listings" for a further sample of *?Cyphella sp* which may be an alternative name here. A further species - *Solenia candida* - is also given to a second specimen of *?Cyphella sp*. A mycologist is needed to finalise this naming and thus give a positive listing for the Park.

Clavarias (Coral & Club fungi) - *Clavaria sp* (Kara), *Deflexula fascicularis* (Kara & her 2 colleagues – a variety of this is already listed, but this is the 'pure' species) and *Lachnocladium sp* (Kara).

Gasteromycetes (Puffballs) - *Calostoma fuscum* (Kara & her 2 colleagues), *Calostoma rodwayi* (Kara collected one of the 2 specimens on record, the other was collected by G.A. & G.M. Crichton) both of which are stalked puffballs, *Hymenogaster sp* (collected by S. Miller), *Lycoperdon pyriforme* (Kara), and *Secotium sp.* (Kara) another stalked puffball.

Phalloids (Stinkhorns) - *Anthurus sp* (Kara).

Underground or Truffle-like fungi - *Cystangium sp* (collected by S. Miller), *Gymnomyces sp* (collected by S. Miller), *Hydnangium sp* (collected by S. Miller), *Mesophellia arenaria* (Kara), *Octaviania sp* (Kara), *Xylobolus frustulatus* (Kara & N.E.M. Walters collected this specimen), *Zelleromyces daucinus* (collected by G.W. Beaton) and *Zelleromyces sp* (collected by S. Miller).

Hydnoids (Spine fungi) - *Dentipellis fragilis* (Kara), *Hericium cirrhatum* (Kara), *Mycoacia lutea* (Kara), *Mycoacia subceracea* (Kara), *Mycoacia subfascicularis* (Kara) and *Steccherinum fimbriatum* (Kara).

Polypores (Woody Pore-fungi) - *Antrodiella citrea* (Kara), *Antrodiella rata* (Kara), *Ceriporia otakou* (Kara), *Ceriporiopsis merulinus* (Kara), *Flavodon flavus* (Kara), *Fuscoporia ferrea* (Kara, also containing *Trichoderma*), *Fuscoporia gilva* (Kara), *Fuscoporia punctata* (collected by N.E.M. Walters), *Fuscoporia wahlbergii* (Kara), *Ganoderma applanatus* (Kara, giving a full specific name), *Gloeoporus phlebophorus* (Kara), *Gloeoporus taxicola** (Kara, with one of the specimens her 2 colleagues were also involved), *Hyphodermella corrugata* (Kara), *Hypochnicium lyndoniae* (Kara collected 5 of the 6 specimens, with the other collected by Kara & her 2 colleagues), *Laetisaria fuciformis* (Kara), *Lenzites sp I.* (Kara), *Lopharia sp* (a cultivated fungus derived from Tarra Valley), *Loweporus tephroporus* (Kara collected the specimen that was then cultivated), *Microporus sp* (Kara), *Perenniporia medulla-panis* (Kara collected 11 of the 12 specimens, with one collected by Kara & her 2 colleagues, and then a specimen was used for cultivation), *Phaeotrametes decipiens* (Kara), *Phanerochaete luteoaurantiaca* (Kara), *Phanerochaete monomitica* (Kara), *Phanerochaete sordida* (cultivated from a sample taken at Tarra Valley), *Phellinus subcontiguus* (Kara), *Physisporinus vitreus* (Kara), *Polyporus seticus* (Kara), *Polyporus varius* (Kara), *Poria sp nov* (Kara), *Porodisculus pendulus* (Kara), *Porpomyces mucidus* (Kara collected all the specimens, one of which was used for cultivation purposes), *Postia sericeomollis* (Kara), *Radulodon calcareous* (Kara), *Ryvardenia cretacea* (Kara), *Skeletocutis alutacea* (Kara), *Skeletocutis lenis* (Kara), *Trametes lactinea* (Kara), *Trametes ochracea* (Kara, with one specimen collected by Kara & her 2 colleagues), *Trametes velutina* (Kara), *Trametes versicolour* (Kara), *Trichaptum sp nov* (Kara), *Veluticeps fusispora* (Kara, with note in the accession book stating an alternative name of *Duportella fusispora* or *n. sp.* – needs name clarification) and *Wrightoporia subrutilans* (Kara).

*Bruce Fuhrer places this species within the Leathery shelf-fungus group in his book A Field Guide to Australian Fungi (2005).

A very interesting collection of 43 new species to be listed for the Park as there are 2 previously undescribed species listed here (of the *Poria* and *Trichaptum* genera), as well as the species that Kara is so well-known for discovering, *Poria healeyi* (now known under the name of *Polyporus mutans*). Both Paratype (21 specimens related to the Type Specimen) and Isotype (a duplicate of the original specimen used for describing the Type Specimen) are listed for these specimens of Kara's, and written up in Trans. Brit. Mycol. Soc. 41: 96 (1958).

Furthermore, several new varieties were also 'discovered' as fungal material was cultivated in the laboratory, adding 2 more positive records to the Park listing. A specimen of *Porostereum crassum* collected by Kara refers to an Ascomycete - discomycete (*Dasyscypha?*) – that was accessioned with 4 lichens at the same time. Are they part of the record for the Park? The assistance of an expert mycologist would be helpful here.

Thelephores (Leathery shelf-fungi) - *Aleurodiscus limonisporus* (Kara), *Byssomerulius albostramineus* (Kara), *Corticium sp nov* (Kara), *Cyclomyces tabacinus* (Kara collected 10 of the 11 specimens, with N.E.M. Walters assisting with the final specimen), *Dichostereum durum* (Kara), *Fomitiporia punctata* (Kara), *Fomitiporia robusta* (Kara), *Fulvifomes rimosus* (Kara collected one specimen, with Kara & her 2 colleagues collecting the other one), *Gloeocystidiellum peroxydatum* (Kara), *Hymenochaete cervina* (collected by N.E.M. Walters), *Hymenochaete cinnamomea* (Kara), *Hymenochaete contiformis* (Kara & her 2 colleagues), *Hymenochaete dictator* (Kara), *Hymenochaete fuliginosa* (collected by N.E.M. Walters), *Hymenochaete innexa* (Kara), *Hymenochaete minuscula* (Kara & her 2 colleagues), *Hymenochaete rhabarbarina* (Kara), *Hymenochaete separata* (Kara), *Hymenochaete sp nov* (collected by N.E.M. Walters), *Hyphodontia arguta* (Kara), *Hyphodontia australis* (Kara), *Hyphodontia paradoxa* (Kara), *Hyphodontia sambuci* (Kara), *Pellicularia sp* (Kara), *Peniophora sp nov* (Kara), *Phlebia leptospermi* (Kara), *Phlebia nothofagi* (specimens collected by Kara , or in one case with her 2 colleagues, then cultivated), *Phlebia rufa* (Kara), *Podoserpula pusio* (Kara), *Scytinostroma odoratum* (Kara & her 2 colleagues collected one specimen, giving it a full specific name, the other was collected by N.E.M. Walters) and *Serpula lacrimans* (Kara).

Another very interesting listing of 31 new species to be listed for the Park, as there are 3 previously undescribed species recorded (2 collected by Kara of *Corticium* and *Peniophora* genera, and one collected by N.E.M. Walters – genus *Hymenochaete*).

Trumpet fungi - *Craterellus cornucopioides* (Kara).

Tremellales (Jelly fungi) - no new additions in this group of Basidiomycetes.

A grand total of 105 species of Basidiomycetes are recommended for inclusion into the Park listings. There are further species that have been mentioned that need further deliberation and checking before they can be included. As part of the database, the following Basidiomycete species are recommended for "Unconfirmed Listing" due to inability to formally complete the identification process: *?Cyphella sp* (Kara, may even be a *Solenia*, as 2 others appear to have been determined as belonging to this genus – see Boletes earlier), *?Daedalea sp* (Kara, a Polypore), *?Macrohyporia dictyopora* (Kara, a Polypore), *?Phellodon niger* (Kara, a Spine fungus), *?Rigidoporus vinctus* (Kara, a Polypore), *?Stereum princeps* (Kara, a Thelephore), *?Tomentella castanea* (Kara, a Thelephore) and *Trichoderma* (see earlier, an Ascomycete).

Eight species make up this listing, which may be able to be finalised with the support of a mycologist. Of further interest is a specimen of *Hericium coralloides* (a Hydnoid – spine – fungus) collected by Kara on 9/5/1955 that was initially sent by the CSIRO to Professor Hartung, 'formerly of the University' [of Melbourne?] who then sent it on to Cambridge University for further research and identification.

Overall, the Fungi listings are a rich source of data and insight to the life and work of Kara. It could be interpreted that the CSIRO were focusing their interest in fungi to identify those that have a role in the process of decay of (commercial) timber, as there is a major emphasis on the Polypores and Thelephores that play a big part in this process. There is a lot of confusion about the placement of species to particular genera or even to which larger grouping they belong. Furthermore, there are some specimens that have been allocated only generic names, but could actually represent several species. An extreme example is for *Poria sp*, of which there are 57 specimens collected. Kara collected 47 of these, a further 5 collected by Kara and her 2 colleagues, 2 by N.E.M. Walters, and 3 cultivated. In viewing the descriptions recorded within the database, a range of colours are recorded for the surface, area around the pores, and for the 'stem'. Some are of a single colour, some blotchy and some have a different colour on the margins. A brief observation suggests several species could exist, our Park listing has 19 species recorded, and a further new (undescribed) species is recorded in the database. The relationship between all these variables can only be truly sorted out by an expert, particularly when most specimens go back to the 1950s and 1960s. So much more research has been done since then and much more known, that it may be possible to more accurately define these specimens today. The support and input of an expert mycologist is definitely needed. I have endeavoured to place species where my own personal research has seen fit to best place them, and is open to expert criticism.

Placing together each of the major fungal groups together, we can see that there are 132 species to be added to the Park listings with a further 10 (or more) as "unconfirmed listings", requiring further research from expert mycologists. Most fungal specimens have a brief description recorded within the database, based on the records that were sent to the CSIRO Herbarium with the fresh specimens. Many specimens were also accompanied by sketches of the spores, as well as other parts of the fungi in some cases. While the actual sketches are not part of the database, they probably still reside within the National Herbarium of Victoria for research purposes. Correlation of these specimens, sketches and the materials (books of sketches) that reside at the Visitors Centre need to be cross-checked for complete and comprehensive recording of the various fungi that were collected.

Lichens

At present there are no records of lichens for Tarra-Bulga National Park, and there has been no attempt to collect records in this area. Any listing that is for the Park area could form the basis of the commencement of a Listing, and for a future Friends project.

There are 43 specimens of lichens recorded in the database (a mere 2.9% of the record), totalling 21 species. Kara collected 2 specimens (2 species) recorded within the record, with most specimens collected by P.M. McCarthy, G. Kantvilas, A.J. Elix & A. Elvebakk, on a Field Trip to Tarra Valley on 14/4/2008. This team collected the lichens from around Cyathea & Tarra Waterfalls. It appears that P.M. McCarthy & G. Kantvilas are expert botanists in the area of Lichens as they have first described several species within the record. The only record that exists from outside the Tarra Valley area was an item collected by G.C. Bratt on

18/2/1968 from Grand Ridge Road near Tarra Valley National Park. With the exclusion of this specimen (due to its uncertain location from the description given – is it within or outside the Park boundary?) all other positively identified records are potentially new listings for the Park due to no listing currently existing. Thus, the new Listing for Lichens should include (Kara's name appears in parentheses when she was responsible for collecting an item): *Agyrium rufum, Arthonia cyanea, Arthonia trilocularis, Baeomyces heteromorphus, Cladonia sp* (Kara), *Badimiella pteridophila, Gyalectidium microcarpum, Hymenelia lacustris, Megalospora subtuberculosa, Bapalmuia buchananii, Byssoloma adspersum, Byssoloma subundulatum, Fellhanera bouteillei, Fellhaneropsis pallidonigrans, Tapellaria phyllophila, Porina subapplanata, Trichothelium assurgens* and *Trichothelium javanicum*. A total of 18 Lichens can be recorded on the first-ever listing of Lichens for Tarra-Bulga National Park. The second specimen that Kara collected was not able to be fully identified. The specimen that exists outside the area is a further species not listed above, and with some follow-up may be able to be identified from within the Park boundary. As there has been the recent research conducted within the Tarra Valley area, it may be possible to invite one (or more) of the team mentioned earlier to return for a follow-up study in Bulga Park area, as well as re-locating the other species in order to more comprehensively cover the Park area.

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In summary, the vast majority of Non-vascular work is focussed on the fungi, but all other areas of the Non-vascular plant world form part of the "Tarra" database. Overall, there are 200 non-vascular species to be added to the listings of flora for Tarra-Bulga National Park, with a further 13 (or more) to be included as "Unconfirmed Reports". The vast majority of these are fungi, and the vast majority are due solely to the effort and work of Kara Healey. While there are stories continuing to exist about the extent of her work, and the naming of fungal species after her, the reality is that some areas are true and there are still untold stories that no-one knew even existed, but have come to the surface through this work.

Conclusions

Throughout the research of the "Tarra" database of materials that have been provided by the National Herbarium of Victoria, an enormous number of new species have been identified that do not currently exist on the publicly-available flora listings for Tarra-Bulga National Park. The 1,471 specimens listed in the database represent 572 separate species, including others where incomplete identification was given. This listing represents the current collection of botanical materials that have been found in and around Tarra-Bulga National Park. The database indicates many new species to be listed, as summarised in Table 3:

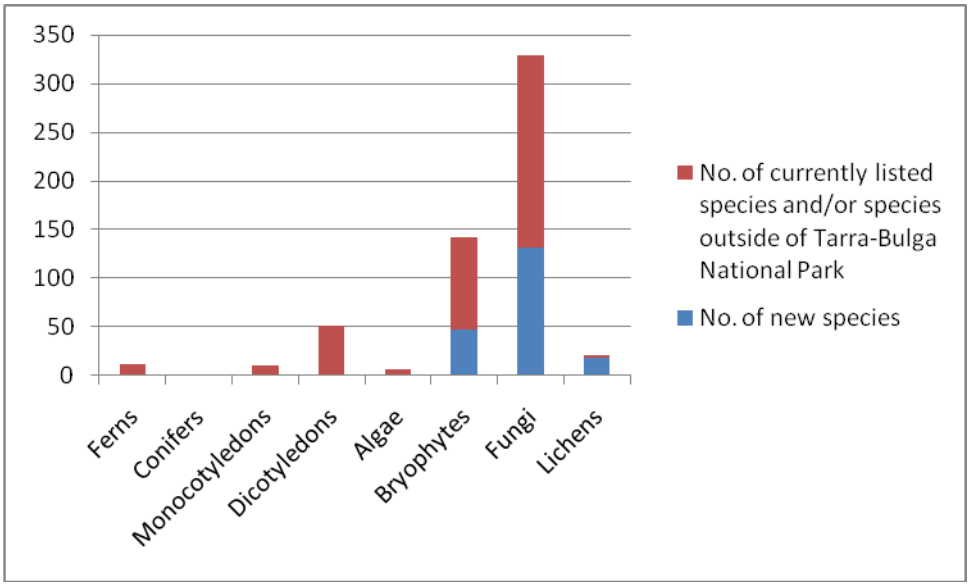
Table 3 – Number of new species to be added to Park listing

	Botanical Groups	Number of Species listed in database	Number of new Species to be listed in Park records
Vascular Plants	Ferns	12	?
	Conifers etc	0	0
	Monocotyledons	11	1
	Dicotyledons	51	?
	Total (Vascular)	*74*	*1 + ?*

Non-vascular Plants	Algae	6	1
	Mosses & Liverworts	142	47 + ?
	Fungi	329	132 + ?
	Lichens	21	18
	Total (Non-vascular)	*498*	*198 + ?*
Grand Total	***(Vascular + Non-vascular)***	***572***	***199 + ?***

A mere 1.4% of the vascular species listed are new records for the Park, while just under 40% (39.8%) of the non-vascular records can be identified as new records. Overall, over a third (34.8%) of the database records the presence of new records for Tarra-Bulga National Park that do not currently exist on the public record (see Graph 2).

Graph 2 – Proportion of new species recorded of all species in the Database



A number of "Unconfirmed Records" exist within the database that can be labelled as such on any newly published listings of flora for the Park. More research is needed to establish the authenticity of these and other partial records.

Along the way specimens collected were sent to other parts of Australia, Yokohama National University (Japan), Cambridge University and to the Royal Botanic Gardens (Kew) (Great Britain) for more detailed analysis & research, assistance in identification and in some cases, storage. Other specimens have been viewed to assist in the writing or referencing for projects such as the Flora of Australia and 'Australian Reference Sets' (general & Hepatic), some of which involved Botanists who also visited the Park to collect specimens, in particular, Dr J.H. Willis and H. Streimann.

There have been a few name changes and, particularly in the case of the fungi, many changes in the status of the species. This has led to confusion, for which we can only call upon the expert advice and support of botanists – particularly bryologists and mycologists. I have suggested the names of A. Thies (Bryologist), P.M. McCarthy (Lichenologist), B. Fuhrer (Mycologist) and for the algae S.H. & E.L. Lewis, as people who have done more recent work within the Park area and are familiar with the National Herbarium of Victoria. Some work can be done in the field by the Friends of Tarra-Bulga National Park, but the back-up of experts

is needed to finalise the listings, sort through the changes and professional debates and finalise the publication of new Park records.

Three new mosses identified through this database are listed in the Advisory List of Rare or Threatened Plants in Victoria (2005), and should be tagged as such when added to the Park botanical listings.

The work of Kara Healey recognised through the naming of 2 species after her, can only be partially recognised from the database. *Poria healeyi* is now known as *Polyporus mutans*, although the literature still remains that recognises her work and the naming of the species after Kara. The database continues to recognise the status of this name through stating that Paratype and Isotype specimens exist for this species and resides at the National Herbarium of Victoria with the specimens collected from the Park by Kara. Officially, then, we can list this species as *Polyporus mutans (= Poria healeyi).*

In relation to the other species named after Kara, *Lambertella healeyi,* it appears that this naming was never formally written up and published, and therefore the name given is officially lost. From the advice of the National Herbarium of Victoria it appears that this species is known as *Lambertella corni-maris*.

A surprise that has surfaced within the database is another specimen collected by Kara in Tarra Valley which has been given Holotype status – the actual specimen used to describe and name the species – that resides in the National Herbarium of Victoria. This species has been written up and published by W.B. Cooke in 1963. This specimen is known as *Solenia australiensis* a Boletes (Fleshy-pore) fungus.

There are 7 previously unidentified species that form the fungal section of the database. Six of these can be attributed solely to Kara's efforts (2 Ascomycetes - *Leotia sp nov* and *Xylaria sp nov*; 2 Basidiomycetes of the Thelephore group – *Corticium sp nov* and *Peniophora sp nov*; and 2 Basidiomycetes of the Polypore group – *Poria sp nov* and *Trichaptum sp nov*). The final species was collected by N.E.M. Walters and is a Basidiomycetes of the Thelephore group – *Hymenochaete sp nov*.

The comprehensive work of Kara Healey (with occasional support by N.E.M. Walters and E.W.B. da Costa) over almost 10 years of the 1950s and 1960s, along with other keen botanists before and after her, continues to produce new and exciting outcomes for the Park. Materials collected have been sent to Kew Royal Botanic Gardens in England for identification (& storage?) (4 specimens), Cambridge University (1 specimen), Yokohama National University (Japan) (1 specimen), as well as being observed for national projects such as the Flora of Australia (2 specimens), and in national "Reference Set's" (3 specimens). Private Philanthropists also assisted in the cataloguing of 3 specimens (notably Annamila Pty Ltd and the Elisabeth Murdoch Trust).

The tradition of Tarra-Bulga National Park having the most extensive listing of species of any Park in Victoria continues as a result of the collection residing in the National Herbarium of Victoria.

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Thompson, B. (n.d.) Additions to Appendix 4 recorded by Arthur Theis [sic]1990 [Letter to Craig Campbell from Latrobe Valley Field Naturalist Club]

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APPENDIX 1

Listing of persons who were involved in the collection of botanical materials listed in the "Tarra" database of the National Herbarium of Victoria *.

Name(s) of Botanists	Dates of Collecting Specimens	Other Information
Ackland, J.J.	28 April 1964	Collected & identified Dicotyledons along Tarra River floodplains. Some of this collection seen for Flora of Australia, "Introduced Plants Project" (ANU) & a pollen sample sent to Monash University (Geography Dept).
Aston, H.I. (Helen)	28 April 1964	Collected & identified Dicotyledons from Tarra River floodplains. National Herbarium of Victoria. (Photographer?)
Audas, J.W.C.	October 1917	Collected Sticky Wattle samples. Botanist of the National Herbarium of Victoria.
Barton, F.C.W.	March 1926	Collected Monocotyledons.
Beaton, G.W. (Gordon)	23 June 1963	Collector & identifier of some fungal species. Named & published *Zelleromyces daucinus* with 2 others.
Beauglehole OAM, A.C. (Cliff)	7 December 1978	Collected & identified Ferns & Monocotyledons for South Gippsland Study Area (including Vic LCC work) at Nooramunga Wildlife Reserve. Member of Western Victorian Field Naturalists Club. Author of The Distribution & Conservation of Vascular Plants in the South Gippsland area, Victoria (1984). Helped compile Vascular Plants list for the Park. Some items seen for Flora of Australia. Sample removed for "Propagule Reference Set".
Bratt, G.C.	18 February 1968	Collected & identified a Lichen from Grand Ridge Road near the Park.
Breteler, F.J.	23 October 1989	Collected Dicotyledons in Tarra Valley area as well as identifying species.
Brown, I.	15 March 1994	Collector of Dicotyledon from Tarra River near Devon North.
Cafarella, R.	February 1984	Collector of Mosses within the Park.
Cameron, J.	March 1889	Collected *Passiflora* sample from uncertain location.
Cann, H.J.	11 October 1954	Collected Fungi. Connected to CSIRO ?
Canning, E.M.	10 January 1969	Collected a Dicotyledon.
Crichton, G.A. (George) & G.M.	30 June 1963	Extensive collector of Fungi from 1963 – 1983 with his collection book now stored in Royal Botanic Gardens Library. Worked for National Herbarium of Victoria?
da Costa, E.W.B.	13 – 15 September 1955	Worked with N.E.M. Walters & Kara Healey collecting numerous fungal specimens.
Duncan, B.D. (Betty)	10 July 1974 – 2 November 1975	Collector & identifier of several Ferns in area around Bulga & Tarra Valley (holds Fern Voucher). Identifier of sub-species of *Asplenium*. Monash University (Botany Dept). (Photographer?). Work seen for Flora of Australia. Co-author

		of Ferns and Allied Plants of Victoria, Tasmania and South Australia (1986).
Elvebakk, A.	14 April 2008	Worked with P.M. McCarthy in collecting lichens.
Filson, R.B. (Rex)	4 & 20 December 1961	Collected Bryophytes some of which were seen for Flora of Australia. National Herbarium of Victoria.
Harris, K.	19 January 1986	Collected *Fuchsia* from Tarra River. (The Ken Harris from Friends of Morwell National Park?)
Healey, Kara		Collected specimens, & assisted with identification, of Bryophytes, Dicotyledons, Ferns, Fungi & Lichens while Caretaker (Ranger) of Tarra Valley National Park. Fungal collector for CSIRO, linked with N.E.M. Walters & E.W.B. da Costa. Had several new species described as well as at least one species named after her. Some of her collection seen for Flora of Australia. Did numerous sketches & some microscopic preparation of samples
Henshall, T.S. (Tom)	20 December 1978	Collector & identifier of Ferns at Binns Hill Junction. Described a sub-species of *Microsorum* based on literature. Some of his work seen for Flora of Australia.
Howard, T.M.	1967	Collected a Moss that was seen for "J.H. Willis Australian Reference Set".
Howitt , A.W.	1882 – 1883	Collected Dicotyledons in Tarra River floodplains & Tarra Ranges [sic].
Isaac, Golda	2 November 1975	Worked with B.D. Duncan collecting Ferns, with some samples seen for Flora of Australia. Worked with Bruce Fuhrer on photography. Monash University (Botany Dept). Co-author of Ferns and Allied Plants of Victoria, Tasmania and South Australia (1986).
Johnston, P.R.	21 May 1996	Fungi collector, identifier & publisher of *Coccomyces globosus*
Kantvilas, Gintaras & Elix, A.J. (Jack)	14 April 2008	Collected Lichens with P.M. McCarthy & A. Elvebakk. Identifier of a number of Lichens. Named & published (with several others) *Porina subapplanata*. Jack is a photographer.
Landy, J.M. (John)	1960	Collected a liverwort. Involved in setting up of some tracks within the Park area, as employed by (Department of Conservation?). Also an Olympic athlete who went on to become Governor of Victoria.
Lebel, Teresa	7 October 2003	Collected Fungus from Bulga for the National Herbarium of Victoria. (Taxonomist?)
Lewis, S.H & E.L.	29 – 30 April 1998	Collected Algae & Dicotyledons from mid-reaches of Tarra River. Some specimens used for phytochemical survey work (held voucher).
McCarthy, P.M. (Patrick)	14 April 2008	Collected Lichens with G. Kantvilas, A.J. Elix & A. Elvebakk. A number of items were sent to Canberra for storage. "Australian Biological Resources Study" group member.

		Named & published (with several others) *Porina subapplanata*. Co-author of Key to the Genera of Australian Macrolichens (2004) and Flora of Australia.
Melville, R.	12 February 1953	Collected Mosses & a sample of Beech under the auspices of the Maud Gibson Trust of the Royal Botanic Gardens & the National Herbarium of Victoria.
Miller, S.	13 June 2004	Collected Fungi.
Morris, P.F.	November 1942	Collected Eucalypt sample from mouth of the Tarra River.
Morrison, H.A.	2 May 1967	Collected Fungi. Photographer.
Mueller, [Baron Sir] F. [Ferdinand von]	April 1853 – 9 May 1853	Victoria's first Government Botanist. Collected flowering plants in lower Tarra River and coastal areas of southern Gippsland. Notes often written in Latin. Named and published numerous species. Work published in Bentham's Flora Australiensis. Bentham sighted at least one of Mueller's collection from South Gippsland. Wrote first key to Victoria's plants & any other publications.
Muyt, A.	18 July 2000	Collected Dicotyledon near Fernholme.
Ogden, D.	16 December 1956	Collected Fungi. (CSIRO?)
Paget, A.	27 October 1994	Collected Flowering plants on Tarra River floodplains.
Reeves, H.T.	26 July 1961	Collected Fungi. Photographer.
Sinnott, N.H. (Nigel)	8 March 1981	Collected Fungi.
Stone, I.G. (Ilma)	1 August 1961 - 15 October 1981	Collected & identified Mosses within Tarra Valley & surrounding areas. Used a red collecting book, stored at the National Herbarium of Victoria. Photographer (?) Worked for University of Melbourne & co-wrote The Mosses of Southern Australia (1976).Collection seen for Flora of Australia.
Streimann, Heinar	14 December 1992 – 14 April 1993	Collected & identifier of Bryophytes in Bulga & Tarra Valley areas some of which were microscopically prepared. Co-authored the Catalogue of Australian Mosses (2002). Work seen for & co-authored Flora of Australia and "J.H. Willis Reference Set".
Thies, A.W. (Arthur)	14 November 1993 21 – 24 February 1997	Collected, identified & annotated# Bryophyte specimens. Only serious collector within Bulga section of the Park (collecting 96% of the Bulga samples in the database). Compiled Park listing of Bryophytes. Several specimens were seen for Flora of Australia.
Thomas, Rev. A.	30 March 1951 – 6 April 1953 (1954?)	Collected & identified Bryophyte species from Tarra Valley area. Collection seen for the Flora of Australia & "J.H. Willis Australian Reference Set".
Thompson, B.	23 July 1994	Collected a Fungus. Member of Latrobe Valley Field Naturalists who visited the Park on an excursion of the LV Field Nats. Also collected several insects with the fungus.

Unknown		All these were fungal samples taken from Tarra Valley that were then cultivated in the laboratory to assist in identification & study purposes. Mostly collected by Kara Healey, but also N.E.M. Walters.
Wakefield, N.A.	January 1958	Collected a Dicotyledon from Tarraville. Best known for his work as a Field Naturalist who authored Fern's of Victoria & Tasmania (1975). Named & published several species of Fern and Dicotyledons. Education Department.
Walsh, N.G. (Neville)	13 January 1992	Collector & identifier of several species of flowering plants. Collector of only vascular plant that is an additional record for the Park from this database. Also, identifier of *Zieria ssp.* mentioned. Co-author of Flora of Victoria (1994) and *A* Census of the Vascular Plants of Victoria (2003). National Herbarium of Victoria.
Walters, N.E.M. (Neville)	13 – 15 September 1955	CSIRO Division of Forest Products contact & co-worker with Kara Healey & E.W.B. da Costa for 10 years. Named & published *Poria healeyi*. Collected & identified many fungal species. Completed several sketches. Frequent correspondent with, & visitor of, Kara Healey.
Willis, Dr J.H. (Jim)	19 November 1961	Assistant Government Botanist for Victoria. Collector & identifier of many Bryophytes & Fungi in Tarra Valley. Author of A Handbook to Plants in Victoria (1962, 1970 & 1972) (2 volumes), co-author of Field Guide to the Flowers & Plants of Victoria (1975) and writer of many other botanical books and articles. Involved in "Australian Reference Set" Project.
Willis, M.E.	27 August 1960	Collected Fungi. (Any relation to J.H. Willis?)

*Unless otherwise stated, specimens collected were gained from Tarra Valley National Park area.
Annotation is the process of updating the name of a species after further well-accepted research.

Other botanists involved in the process of identification of specimens include:
Dr R.J. Chinnock (State Herbarium of South Australia, also member of Flora of Australia authors), D.L. Jones (also member of Flora of Australia authors), P.D. Bostock (also member of Flora of Australia authors), J.A. Jeanes (also annotator), G. Kantvilas, T.W. May, G.H. Cunningham (also named & published numerous Fungi), W.B. Cooke (named & published *Solenia australiensis* collected by Kara), J. Ginns, R.W.G. Dennis, D.A. Reid (named & published several Fungi), J.M Dingley, M.D. Crisp, T.J Entwisle (named & published the red algae *Batrachospermum antipodites* and co-author of Flora of Victoria (1994)), L.G. Adams (also member of Flora of Australia authors), B.R. Maslin, A.J. Whalley, T.E.H. Aplin, C. Booth, W.R. Barker, D.J. McGillivray, T. Bruce Muir (National Herbarium of Victoria), K.L. Wilson (named & published several Dicotyledons), J.C. Reid, K. Rule, M.I.H. Brooker, D.J. Murphy, P. Sollman, H.M. Jolley, J. Milne, Paul G. Wilson, A.R. Bean, N.S. Lander, P.W. Michael, I.R. Thompson (also member of Flora of Australia authors and named & published Dicotyledon), P.S. Short, M.G. Manuel, N.G. Miller, N. Klazenga (co-author of Catalogue of Australian Mosses (2002)), S.P. Churchill, M. Mastracci, J. Hyvoenen, J. Shaw, J. Lewinsky, Dr A. Touw (Leiden University), Professor D.G. Catcheside, P.J. Vollebergh, B.M. Thiers, R.S. Tangney, George A.M. Scott (Hepatic Reference Set, co-author of The Mosses of Southern Australia (1976). Monash University), D.A.

Meagher, J.A. Curnow, Mrs E.A. Hodgson (named & published numerous Liverworts), V. Stajsic (also annotator), T.J. Entwisle, Professor Hartung (Melbourne University?), D.C. Cargill, M.A. Bruggeman-Nannenga, and H.J. Hewson.

Annotator's not previously listed: M.F. Paull, W.A. Gebert, AVH (Australian Virtual Herbarium staff?)

Members of Flora of Australia authors' team not previously listed: K.U. Kramer