Introduction to the Census of the Queensland flora and fungi 2023

Queensland Herbarium

Queensland Government

Prepared by: Queensland Herbarium and Biodiversity Science, Department of Environment, Science and Innovation

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Cover image

Lepidium strongylophyllum, photographed in the field near Quilpie, south-western Queensland; photographs by Tony Bean (Queensland Herbarium).

Acknowledgements

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Contents

About the Queensland Herbarium Collections

The Queensland Herbarium houses the State's flora and fungi collections comprising more than 900,000 specimens and associated data of mainly Queensland species of plants, fungi and algae. Botanists and members of the public contribute thousands of specimens to the herbarium collection each year, of which some represent new species records and new distribution records for both native and naturalised species. Most specimens are pressed and dried, then mounted on archival sheets. Some bulky specimens are stored in boxes or paper bags and some delicate specimens are stored in preserving liquid. Each specimen is labelled with the collector, collector's number, date of collection, location, habitat and the plant's features such as bark and flower colour, as provided by the collector. This information is then recorded in the HERBRECS database. Data for the Queensland native and naturalised specimens are available via the Australasian Virtual Herbarium (http://avh.ala.org.au/occurrences/search?q=collection_uid%3Aco49), and is summarised in the census list (http://www.data.qld.gov.au/dataset/census-of-the-queensland-flora-and-fungi-2023).

Manuals explaining how to collect plant specimens (https://www.qld.gov.au/environment/plants-animals/plants/herbarium/identify-specimens/) and fungi specimens (https://www.qld.gov.au/__data/assets/pdf_file/0032/67478/fungi-coll-manual.pdf) are available. Algae specimens require specialist processing, please contact us for further information on this group.

Significance of the collections

The Queensland Herbarium specimen collections are fundamental and irreplaceable materials and data sources which are used to document the flora, fungi and vegetation of Queensland. They are essential for: taxonomic and phylogenetic research, the application of scientific names, new species discovery, identification of species, mapping and modelling the distribution of species, conservation planning and management, understanding the ecology of species, biodiversity assessment, state legislation (*Vegetation Management Act, Nature Conservation Act, Biosecurity Act, Environmental Protection Act*), weed identification and ecology, agriculture, ethnobotany, forensic botany, molecular biology and education.

Type specimens

A Type specimen is a specimen assigned by a taxonomist to be the reference point for the application of a scientific name. Every species with a scientific name has a Type specimen(s). A new species must be published under international rules that standardise botanical name usage across the world (Turland *et al*. 2018) and its type specimen must be housed in an internationally recognised herbarium. The Queensland Herbarium holds more than 10,000 Type specimens. High resolution images of the vascular plant Type specimens held at the Queensland Herbarium (BRI) are now available on line at JSTOR (Global Plants Initiative; http://plants.jstor.org) as part of the Global Plants Initiative.

Voucher specimens

Scientists using plants in their research are usually required to deposit voucher specimens in a herbarium collection as a permanent and verifiable record of the plant sampled. Voucher specimens are also required to verify a new declared weed or threatened species record and are often used as a point of reference for published photographs of species, seed bank accessions or other records. Please contact us before collecting voucher specimens to find out what is required and discuss lodgement considerations.

Census of the Queensland Flora and Fungi

This census provides an authoritative published list of all taxa of plants, algae, fungi and lichens that are known to be native or naturalised in Queensland, updated from the previous census lists (Laidlaw 2022). Queensland species that are only known from cultivation are not included in the census.

The accepted names of all native and naturalised species, subspecies, varieties, forms and hybrids known to occur in Queensland are listed, generated from the Queensland Herbarium specimen information database (HERBRECS) as of 21 December 2023. The list is based solely on the Queensland Herbarium specimens, from collections made over the last 250 years.

2023 presentation

The Census of the Queensland Flora and Fungi 2023 list (http://www.data.qld.gov.au/dataset/census-of-the-queensland-flora-and-fungi-2023) is provided in spreadsheet compatible format on the Queensland open data portal. The census list includes scientific name, distribution (pastoral district) and status of all currently known Queensland plants, algae, fungi and lichen taxa (see definitions below). Print format for the list is also available. A list of abbreviations is also supplied on the open data portal to assist with interpretation.

A list of name and status changes since the publication of the *Census of the Queensland Flora and Fungi 2022* (Laidlaw 2022), is provided in Appendix A of this document.

Images of Type specimens from many herbaria are available to view at JSTOR (Global Plants Initiative) http://plants.jstor.org. Images of over 200,000 Queensland specimens from our collection are also available on the Atlas of Living Australia https://www.ala.org.au/; these images can be accessed via our collections page https://collections.ala.org.au/public/show/co49 or through search results of Queensland Herbarium records.

Census of the Queensland Flora and Fungi 2023 list (spreadsheet compatible format)

All data are presented in a single spreadsheet (**Full data set**) of Queensland plants, algae, fungi, lichens and cyanobacteria. The full data set includes names (including botanical names broken down into parts, i.e. genus, species etc.), higher classification (e.g. Kingdom, Class, Order), Group Name, distributions based on pastoral districts, and native/naturalised status in Queensland. This spreadsheet can be filtered to show the data that was presented in separate spreadsheets in previous years (e.g. filter on Naturalisation Status).

The Group name column enables filtering of the census to specific groups of Queensland plants: **Angiosperms**, flowering plants; **Pteridophytes**, ferns and lycophytes; **Gymnosperms**, conifers and cycads; **Bryophytes** (mosses), **Hornworts** and **Liverworts**, Non-vascular plants; **Fungi**, (macrofungi only, microfungi are excluded); **Lichens**; Algae (filter by kingdom for different groups of algae). More information on the classification of these groups is given below.

Specimen counts are given for each Queensland pastoral district, together with regional (non-Queensland) counts where applicable. Queensland collections not assignable to a district are recorded under “Qld”. Please refer to the explanatory notes and maps provided for World regions (Map 1) and Australian States and Territories and Queensland pastoral districts (Map 2) at the end of this document. Note that the names of all pastoral districts of Queensland are spelled out in full in the census spreadsheet.

Where a species (or subspecies or variety) is recognised to exist, but not yet formally described, a temporary phrase name linked to a herbarium specimen is provided e.g. *Tephrosia* sp. (Barkly Downs S.L.Everist 3384). Taxa that are known to occur in Queensland but which are only represented by verified specimen(s) held at another herbarium are included with the text ‘No specimen in BRI’ in the notes column of the spreadsheet.

Native status

Native species are here defined as those that are considered to have evolved in Queensland unaided by humans, or have migrated to and persisted in Queensland without assistance from humans, from an area in which they are considered to be native. This includes species introduced to Queensland pre-1500 CE. Native species to Queensland are indicated by having ‘**Native to QLD**’ in the Naturalisation Status column.

Queensland native plant species that have become naturalised in a pastoral district outside their native range are also recorded in a separate list. These have a status of ‘**Native and Naturalised in QLD**’. The Notes column in the spreadsheet has information about where these plants are considered to be native and

where they are considered to be naturalised.

Non-native status

Non-native, non-cultivated taxa are indicated in the 'Naturalisation Status' under one of three categories: naturalised, formerly naturalised and doubtfully naturalised.

Naturalised taxa are introduced to Queensland by human activity (post 1500 CE) and which have subsequently successfully established populations by reproducing without cultivation or other human assistance or intervention. **Formerly naturalised** species are those that were previously considered naturalised but are presumed to have disappeared from the landscape (not collected for more than 50 years). **Doubtfully naturalised** species have populations that may be in the early stages of naturalisation and not yet established in the landscape, or their continued existence in the landscape may be doubtful, for example where the entire Queensland population has been subject to an eradication program. Casual plants or weeds appearing only in gardens and other cultivated situations are not considered to be either doubtfully naturalised or naturalised. Plants known only from cultivation are excluded from the census.

Many naturalised and doubtfully naturalised species pose a threat to natural ecosystems, crops and grazing lands. More than 100 of these species are listed as pests (restricted or prohibited) under the *Queensland Biosecurity Act 2014* (https://www.legislation.qld.gov.au/view/pdf/inforce/current/act-2014-007).

Conservation (NCA) status

The conservation status (Critically endangered, Endangered, Extinct, Extinct in the wild, Vulnerable, Near Threatened or Special least concern) is as recorded in the Queensland *Nature Conservation Act 1992* (https://www.legislation.qld.gov.au/view/pdf/inforce/current/act-1992-020) for species listed in the *Nature Conservation (Plants) Regulation 2020* (https://www.legislation.qld.gov.au/view/html/inforce/current/sl-2020-0137) as of 21 November 2023. The remaining native plant species have a conservation status of Least Concern and for these the NCA status column is blank.

Scientific names

The scientific names used in the census list comply with the rules of the International Code of Nomenclature of Algae, Fungi and Plants (Shenzhen Code) (https://www.iapt-taxon.org/nomen/main.php) (Turland *et. al.* 2018) and the International Code of Nomenclature for Cultivated Plants - Ninth Edition (https://www.ishs.org/scripta-horticulturae/international-code-nomenclature-cultivated-plants-ninth-edition) (Brickell *et al.* 2016). Standard author abbreviations are available from the International Plant Names Index (https://www.ipni.org/). Names at the level of Kingdom and Phylum follow Cavalier-Smith (2004).

Data limitations

The census list is a snapshot of the known flora and fungi of Queensland as at 21 December 2023, reflecting the accepted scientific names and distribution of Queensland plants, algae, cyanobacteria, lichens and macrofungi in the State of Queensland based primarily on the Queensland Herbarium collections. Other Australian herbarium collections holding Queensland plant data are not included, but see comment above regarding species not represented by a Queensland Herbarium specimen. Records from other herbaria may provide additional localities for a species. Visit the Australasian Virtual Herbarium (http://avh.chah.org.au/).

Readers may submit specimen collections to fill obvious distribution gaps, but it is requested that they first contact us to find out what is required. Bryophytes, algae, lichens and fungi usually require additional processing. Note that a permit is required for collecting activities on state lands or where listed threatened species are involved. Contact the Queensland Herbarium Queensland.Herbarium@qld.gov.au.

Queensland flora and fungi statistics 2023

The Queensland native flora and fungi is currently represented by 14,719 native species* across all groups, nearly double the number listed by Bailey in 1913 (7,781 species). These native species include 1,047 taxa currently listed as threatened: Critically endangered, Endangered, Vulnerable, Near Threatened or Extinct in the wild. The remaining native species are listed as Special Least Concern (829 species) or Least Concern (no value is given in NCA status column in the census).

There are currently 1,350 non-native species that are known to have become naturalised in Queensland, including two fungi species. The naturalised flora and fungi of Queensland represents more than 15% of the total known vascular flora according to Queensland Herbarium records. A further 334 species are considered to be doubtfully naturalised. In addition, 27 native Queensland species are recorded here as naturalised outside of their native range. In Queensland, 94 non-native species previously considered to be naturalised have now disappeared from the landscape (not collected for more than 50 years) are here listed as formerly naturalised.

One hundred and ten years of flora and fungi species discovery is summarised in Table 1. Census data over the last two decades are summarised in Figure 1.

*Species statistics currently include hybrids, intergrades and cultivars.

Plantae: vascular plants

Vascular plants are those that have distinct vascular tissue (xylem and phloem), as opposed to the non-vascular plants (see below). They are considered to have evolved from a single freshwater green algal ancestor and now include approximately 250,000 species worldwide. The flowering plants (angiosperms) are the largest group, but Queensland also has many native conifers, cycads (gymnosperms) and ferns (pteridophytes). The classification presented here for angiosperms generally follows that of the Australian Plant Census (https://biodiversity.org.au/nsl/services/apc) with some exceptions. The families of the ferns and lycophytes have recently been updated to follow the Pteridophyte Phylogeny Group classification (PPG1 2016).

Queensland's 8,869 native vascular plant species represent more than 40% of the known Australian vascular flora. More than one third of these species are endemic, that is they are only found in Queensland. New vascular plant species are still being discovered and described in Queensland at the rate of approximately 20 species per year.

The three largest families of vascular plants in Queensland are the Leguminosae (wattles and legumes) with 937 species, the Myrtaceae (paperbarks and eucalypts) with 690 species, and the Poaceae (grasses) with 640 species). These three families dominate many ecosystems. The next largest Queensland families are Orchidaceae (orchids) with 442 species, Cyperaceae (sedges) with 383 species and Asteraceae (daisies) with 375 species. The families with the most naturalised species are Poaceae (191 species), followed by Leguminosae (180 species) and Asteraceae (139 species). Queensland is also the Australian centre of diversity for several iconic plant groups such as the cycads and zamia palms (51 species) and the ferns and lycophytes (403 species).

Legumes

In Queensland we use the family name Leguminosae for legumes, rather than the Fabaceae to avoid confusion, as Fabaceae can mean the papilionoid legumes only or all legumes. In this census we also use the subfamilial classification for the legumes (LPWG 2017). Five of the six subfamilies are found in Queensland and the subfamily is shown in parentheses after the family name, e.g. Leguminosae (Papilionoideae).

For reference, all genera in Queensland previously included in:

- Caesalpiniaceae are now in either subfamily Caesalpinioideae, Cercidoideae, Detarioideae or Dialioideae.
- Fabaceae are now in subfamily Papilionoideae
- Mimosaceae are now in the informal 'mimosoid clade' of subfamily Caesalpinioideae.

Gill Brown, Jason Halford

Orchids

The classification of plant families in Australia is constantly being reviewed by the Australian Plant Census. Somewhat prominently amongst these, due to their public popularity, is Orchidaceae. Our understanding of relationships among genera and species of Australian native orchids has undergone much refinement over the past two decades and is still ongoing. Such research has provided evidence for a need for change in classification resulting in name changes. In some cases, there are many name changes, even for the same species, over a relatively short time. This has led to a degree of uncertainty regarding orchid names. To review current studies and broadly understand the evolutionary relationships between genera and species in Australian orchids, the Orchid Taxonomy Advisory Group Australasia (OTAGA) has been established, to which the Queensland Herbarium is a contributor, and aims to provide a stable nomenclature for this family over the coming months. Although classification and names currently used by the Queensland Herbarium may differ from other institutions, this will be updated as nomenclatural consensus is reached amongst the states through the OTAGA process and becomes available in subsequent censuses. Where views of researchers and institutions differ, synonyms may be found at the Australian Plant Name Index (APNI) website (https://biodiversity.org.au/nsl/services/apni).

Mike Mathieson

Algae

Algae and Cyanobacteria (blue-green algae) have traditionally been grouped together based on their ability to undertake photosynthesis in aquatic environments. Unlike land plants which evolved from a common ancestor, different lineages of algae have evolved separately in aquatic environments over the last three billion years. These different evolutionary histories are reflected in the current classification scheme which assigns ‘algal’ species to four of the six Kingdoms of Life on Earth: cyanobacteria (Eubacteria), red and green algae (Plantae), euglenoids and dinoflagellates (Protozoa, not covered in this census) and the brown algae, diatoms and several other phyla (Chromista, algae in the narrow sense). The classification of the ‘algae’ has changed markedly over the last fifty years and is expected to undergo further revisions as new species are discovered and more intensive studies generate new data. The arrangement of the kingdoms and their constituent cyanobacterial and algal species in this census follows Cavalier-Smith (2004).

Globally, there are approximately 34,000 described species of cyanobacteria and algae, but this is probably only a tenth of the total species as there are many species still to be discovered. These organisms play an important role in aquatic ecosystems underpinning food webs including those supporting commercial fisheries, contributing to global carbon, nitrogen and sulphur cycles, stabilizing sediments to improve water quality and providing habitat for many other species.

Julie Phillips, Glenn McGregor

Plantae: non-vascular plants—bryophytes

“Bryophyte” is a collective term for three distinct lineages of non-vascular land plants within the Kingdom Plantae: mosses (Bryophyta), liverworts (Marchantiophyta) and hornworts (Anthocerotophyta). There are an estimated 20,000 species worldwide with approximately 1,800 occurring in Australia.

With over 1,000 known species occurring in Queensland, the Bryophytes are the second-most diverse group of land plants after the angiosperms and occupy a diverse range of habitats from arid environments through to tropical rainforests. Along with cyanobacteria, lichens and algae, bryophytes are a critical component of the biological crusts which bind the soil surface in semi-arid to arid areas.

Andrew Franks

Fungi: macrofungi

Fungi are an important, oft-overlooked component of ecosystem biodiversity. The functions that fungi perform include decomposition of organic matter, and thereby recycling of nutrients; symbiotic fungi that are associated with plant roots and tissues, assisting with water and nutrient absorption, and in some cases serving a protective role; carbon sequestration; soil structure and stability; bioremediation; and the pathogenic roles associated with disease, such as wood rot and myrtle rust. Notably, many fungi are important food sources for native animals.

Fungi appear in the fossil record at around the same time as plants and animals. The macrofungi recorded here include those with larger, more visible fruiting bodies and are mainly decomposers or mycorrhizal. Two

groups are included in this census, reflecting the majority of fungal collections: the sac fungi (Ascomycetes) and the club fungi (Basidiomycetes). The sac fungi are recognised by the typical ascus (plural asci), a cup or sac usually containing eight sexually-produced spores. These include the cup fungi, morels, truffles and most lichens. Club fungi are recognised by their distinctive basidium (plural basidia), or club-shaped cells, which usually bear sexually-produced spores in groups of four. They include the mushrooms, boletes, puffballs, coral fungi, bracket fungi and many other forms.

The fungal biodiversity of Queensland is still largely unknown and the classification of fungi is undergoing rapid changes due to the results of molecular studies. Recent surveys in south-eastern Queensland have shown that more than 70% of fungi species in this area are new to science. The Queensland Herbarium and the Queensland Mycological Society (http://qldfungi.org.au/) are actively involved in discovering and documenting the fungi flora. Two non-native species are known to be naturalised in Queensland.

Nigel Fechner

Fungi: lichens

The lichens are a group of organisms primarily characterised by a symbiotic relationship between a fungus and a photobiont (photosynthetic organism). The photobiont is usually a green alga or a cyanobacterium (blue-green alga). The fungus is almost always a sac fungus (Ascomycete) but may also be a club fungus (Basidiomycete). About 40% of sac fungi are lichenized. Lichens are considered to be ancient in origin, appearing in the earliest known land floras.

A lichen name is strictly applicable to the fungal component only, the photobiont being classified separately. Most of the green-algal photobionts are not known to occur outside of lichens and many show genetic adaptation to the lichen lifestyle. Lichenization has occurred at least five times within the Ascomycota and several times in the Basidiomycota.

About half of the known Australian lichens occur in Queensland, with many more yet to be discovered, especially in central and northern Queensland. The Queensland Herbarium and the Queensland Mycological Society are actively involved in discovering and documenting the lichen flora.

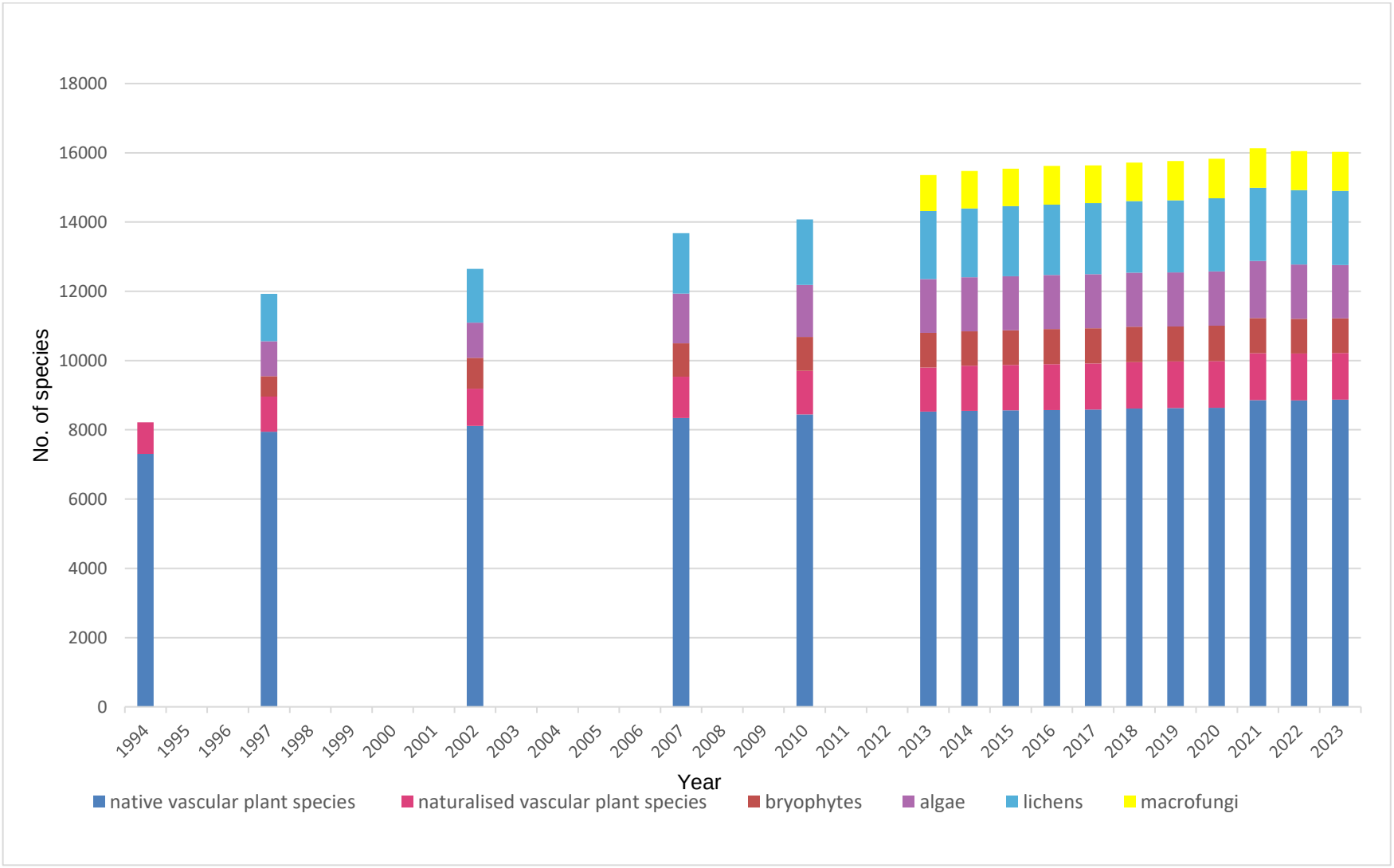
Rod Rogers

Table 1. Selected Queensland flora and fungi statistics: 1913 to 2023

	Kingdom & Group	2023	2022	2021	2019	2018	2013	2007	2002	1997	1994	1913 (Bailey)
Plantae: Angiosperms (flowering plants)	Native (inc. 'native and naturalised')	8,392	8,380	8,384	8,175	8,163	8,078	7,901	7,677	7,512	7,252	4,626
	Naturalised	1,330	1,332	1,329	1,325	1,320	1,262	1,175	1,066	1,001	910	297
	Subtotal	9,722	9,712	9,713	9,490	9,483	9,340	9,076	8,743	8,513	8,162	4,923
Plantae: Gymnosperms (conifers, cycads and allies)	Native	74	74	74	66	66	64	62	59	60	54	29
	Naturalised	7	7	7	6	6	6	6	3	3	3	0
	Subtotal	81	81	81	72	72	70	68	62	63	57	29
Plantae: Pteridophytes (ferns and lycophytes)	Native (inc. 'native and naturalised')	403	399	403	390	386	381	381	377	374	375	233
	Naturalised	11	11	11	11	11	11	10	10	7	5	0
	Subtotal	414	410	414	401	397	392	391	387	381	380	233
Plantae: non-vascular plants	Mosses (Bryophyta)	554	553	554	573	571	561	556	574	595	not listed	360
	Liverworts & hornworts	453	452	461	437	452	437	411	315	not listed	not listed	113

Algae (Plantae, Chromista and Cyanobacteria)	Algae	1,537	1,569	1,650	1,566	1,654	1,555	1,433	1,011	1,004	not listed	718
Fungi (lichens and macrofungi groups)	Lichens	2,137	2,148	2,115	2,079	2,067	1,962	1,742	1,558	1,370	not listed	828
	Native Macrofungi	1,133	1,122	1,137	1,138	1,116	1,036	not listed	not listed	not listed	not listed	874
	Naturalised fungi	2	2	2	2	2	2					
Totals	Total native	14,719	14,670	14,778	14,464	14,385	14,076	—	—	—	—	7,781
	Total naturalised	1,350	1,352	1,349	1,344	1,339	1,279	1,191	1,079	1,011	918	297
	Overall total native and naturalised	16,069	16,022	16,127	15,845	15,724	15,355	—	—	—	—	8,078

Figure 1. Queensland flora and fungi statistics: 1994 to 2023



Useful references and web resources

Australasian Virtual Herbarium, Council of Heads of Australasian Herbaria http://avh.chah.org.au

Australian Plant Census, IBIS database, Centre for Australian National Biodiversity Research, Council of Heads of Australasian Herbaria, https://biodiversity.org.au/nsl/services/apc

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Contributors

[*= Queensland Herbarium honorary research associate or external contributor]

Flowering Plant families (Angiosperms):

Curator/s	Families
Bean A.R.	Acanthaceae, Amaranthaceae, Apiaceae, Araliaceae, Asteraceae, Balsaminaceae, Caprifoliaceae, Caryophyllaceae, Chrysobalanaceae, Cleomaceae, Hydatellaceae, Hydroleaceae, Lamiaceae, Lythraceae, Martyniaceae, Mazaceae, Melastomataceae, Myodocarpaceae, Passifloraceae, Pedaliaceae, Plantaginaceae, Ranunculaceae, Rhamnaceae, Rosaceae, Solanaceae, Sphenocleaceae, Stylidiaceae, Thymelaeaceae, Viburnaceae
Bean A.R. (Leptospermoideae); Guymer G.P.* & Jessup L.W.*(Myrtoideae)	Myrtaceae
Bean A.R. & Forster P.I.	Lamiaceae
Booth R.	Centrolepidaceae, Cyperaceae, Juncaceae, Restionaceae
Brown G.K.	Leguminosae (Caesalpinioideae, mimosoid clade and Papilionoideae)
Clarkson J.R.*	Erythroxylaceae
Crayn D.*	Ericaceae
Dowling R.	Rhizophoraceae
Edginton M.	Brassicaceae, Chenopodiaceae, Cucurbitaceae, Proteaceae (*Grevillea* & *Hakea),* Santalaceae, Scrophulariaceae
Fechner N.A.	Aizoaceae, Cannabaceae, Linderniaceae, Papaveraceae, Phrymaceae, Portulacaceae, Stackhousiaceae
Fensham R.J.	Burmanniaceae, Eriocaulaceae, Thismiaceae
Fensham R.J. and Field A.R.	Pandanaceae
Field A.R.	Aristolochiaceae, Cymodoceaceae, Nepenthaceae, Nymphaeaceae, Ruppiaceae, Zosteraceae
Field A.R. and Halford, J.J.	Moraceae
Forster P.I.	Agavaceae, Amaryllidaceae, Apocynaceae, Araceae, Arecaceae, Argophyllaceae, Asphodelaceae, Begoniaceae, Blandfordiaceae, Bromeliaceae, Cactaceae, Campanulaceae, Commelinaceae, Convallariaceae, Costaceae, Crassulaceae, Dioscoreaceae, Doryanthaceae, Dracaenaceae, Escalloniaceae, Flagellariaceae, Haemodoraceae, Hyacinthaceae, Iridaceae, Loganiaceae, Melianthaceae, Moringaceae, Phyllanthaceae, Piperaceae, Proteaceae (all except *Grevillea & Hakea*), Putranjivaceae, Ripogonaceae, Rousseaceae, Rutaceae, Smilacaceae, Stemonaceae, Taccaceae, Violaceae, Xanthorrhoeaceae, Xyridaceae
Forster P.I. and Guymer G.P.*	Sapindaceae

Forster P.I. and Halford D.A.*	Euphorbiaceae, Picrodendraceae, Rubiaceae
Forster P.I. and Ngugi L.B.	Zingiberaceae
Guymer G.P.*	Alseuosmiaceae, Balanopaceae, Bignoniaceae, Bombacaceae, Byttneriaceae, Capparaceae, Corynocarpaceae, Dilleniaceae, Elaeagnaceae, Elaeocarpaceae, Gesneriaceae, Icacinaceae, Loranthaceae, Malvaceae, Nothofagaceae, Orobanchaceae, Pennantiaceae, Pentapetaceae, Simaroubaceae, Stemonuraceae, Surianaceae, Tamaricaceae, Winteraceae
Guymer G.P.* & McDonald W.J.*	Sterculiaceae
Halford D.A.*	Brownlowiaceae, Convolvulaceae, Gyrostemonaceae, Muntingiaceae, Sparrmanniaceae
Halford J.J.	Haloragaceae, Juncaginaceae, Leguminosae (Caesalpinioideae, Cercidoideae, Detarioideae and Dialioideae), Maundiaceae, Menyanthaceae, Nelumbonaceae, Polygonaceae
Jackes B.*	Vitaceae
Jessup L.W.*	Actinidiaceae, Akaniaceae, Aphanopetalaceae, Atherospermataceae, Austrobaileyaceae, Basellaceae, Berberidaceae, Berberidopsidaceae, Bixaceae, Burseraceae, Calycanthaceae, Cardiopteridaceae, Caricaceae, Clusiaceae, Connaraceae, Datiscaceae, Dichapetalaceae, Dipentodontaceae, Elatinaceae, Eupomatiaceae, Hamamelidaceae, Hanguanaceae, Hernandiaceae, Himantandraceae, Juglandaceae, Lauraceae, Malpighiaceae, Menispermaceae, Myristicaceae, Myrsinaceae, Ochnaceae, Opiliaceae, Paulowniaceae, Samolaceae, Theaceae, Trimeniaceae, Ulmaceae
Jessup L.W.* & Field A.R.	Annonaceae, Ebenaceae
Jessup L.W.* & Halford J.J.	Achariaceae, Anacardiaceae, Aquifoliaceae, Celastraceae, Cornaceae, Monimiaceae, Symplocaceae, Urticaceae
Laidlaw, M.J.	Calceolariaceae, Cunoniaceae, Heliconiaceae, Salicaceae, Tetrachondraceae
Mathieson, M.T.	Byblidaceae, Droseraceae, Frankeniaceae, Goodeniaceae, Lentibulariaceae, Macarthuriaceae, Molluginaceae, Zygophyllaceae
Mathieson M.T. & Field A.R. (northern)	Orchidaceae
McDonald W.J.*	Combretaceae
Ngugi L.B.	Asparagaceae, Cannaceae, Marantaceae, Meliaceae, Musaceae, Sapotaceae
Pennay C.	Alismataceae, Aponogetonaceae, Cabombaceae, Ceratophyllaceae, Hydrocharitaceae, Mayacaceae, Onagraceae, Philydraceae, Podostemaceae, Pontederiaceae, Potamogetonaceae, Typhaceae
Pollock A.	Nyctaginaceae
Simmons, C.L.	Casuarinaceae, Pittosporaceae
Thompson E.J.*	Boraginaceae, Polygalaceae
Thompson E.J.*, Fabillo M. (subfamilies Chloridoideae & Panicoideae) & Kelman D. (*Bambusa*)	Poaceae
Wang J.	Alliaceae, Alstroemeriaceae, Anthericaceae, Balanophoraceae, Boryaceae, Colchicaceae, Gentianaceae, Hemerocallidaceae, Hypoxidaceae, Laxmanniaceae, Liliaceae, Linaceae,

	Maesaceae, Pentaphylacaceae, Petermanniaceae
Wood A.	Geraniaceae, Lecythidaceae, Magnoliaceae, Strelitziaceae, cultivated species (all families)
Yates N.	Petiveriaceae, Phytolaccaceae, Plumbaginaceae, Tropaeolaceae

Conifers, cycads and allies (Gymnosperms): Forster P.I.; Edginton M. (Pinaceae)

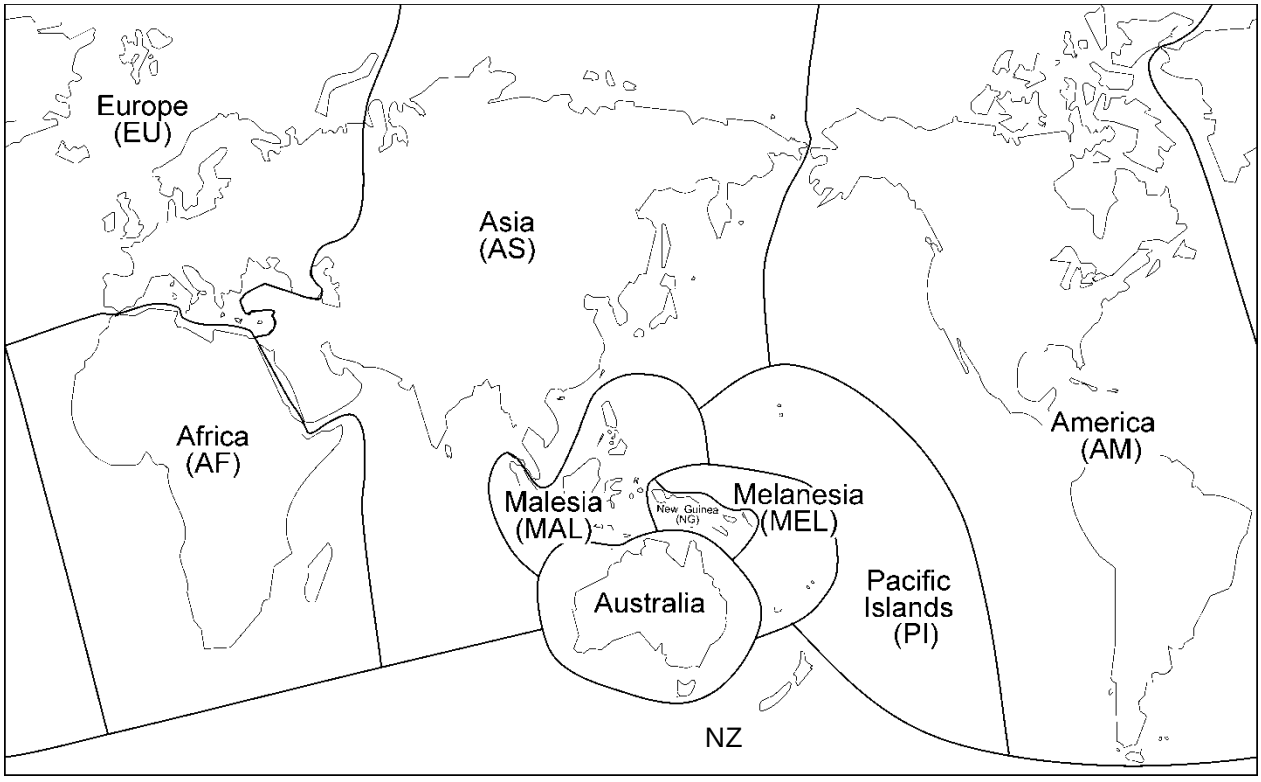
Ferns and lycophytes (Pteridophytes): Field A.R. & Bostock P.D.*

Mosses, liverworts, hornworts (Bryophytes): Franks A.J.

Algae (all groups): McGregor G.B.* (freshwater); Phillips J.A.* & Fabillo M. (marine)

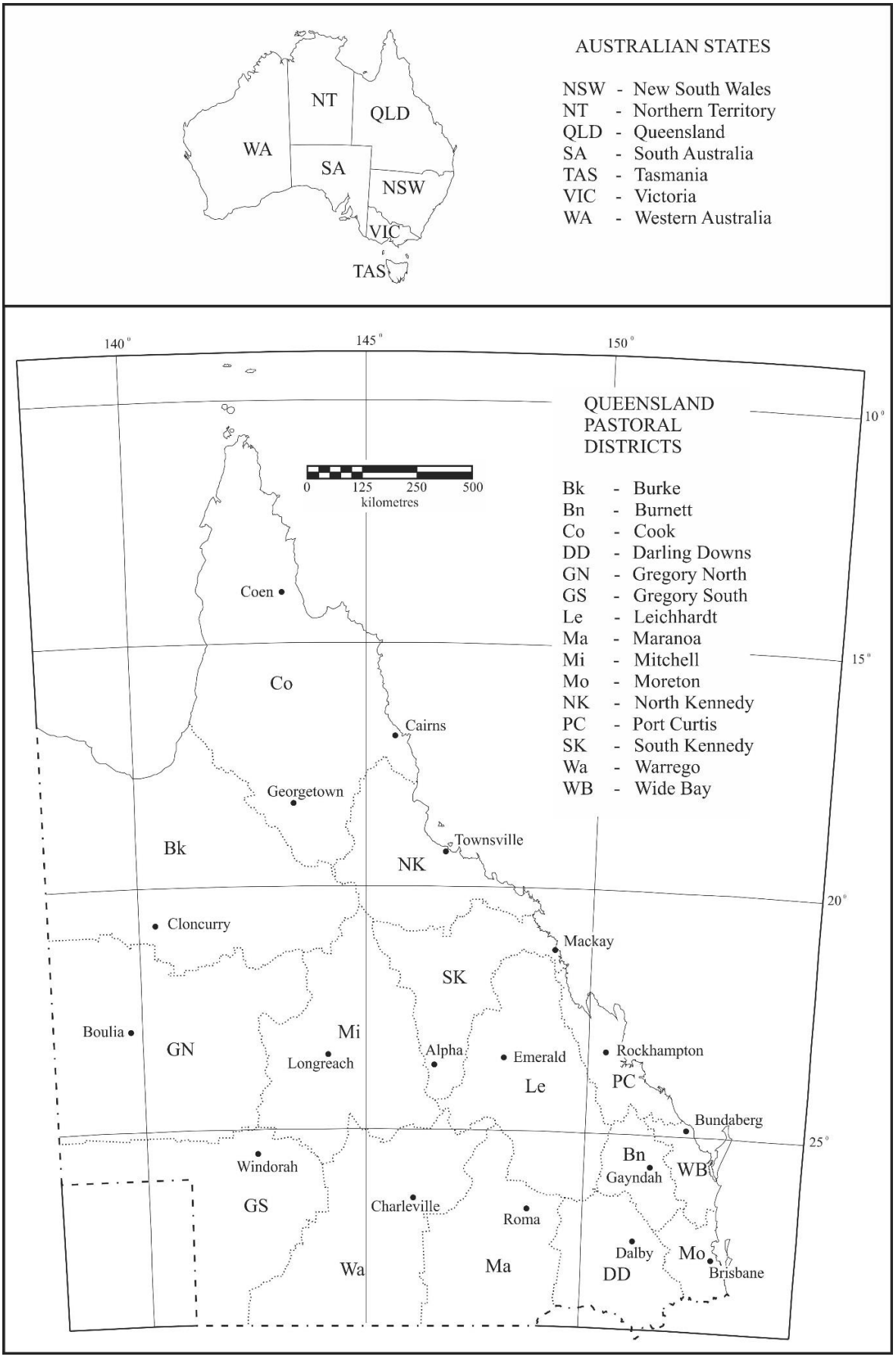
Lichens: Rogers, R.W.* & Holland, A.E.*

Macrofungi: Fechner N.A., with assistance from Guard F.*



Map 1. Regions of the world

Map 2. States of Australia and pastoral districts of Queensland



Appendix A: New names, new combinations and other status changes 2022 to 2023

Ferns and Lycophytes

Family	Botanical name 2022	Botanical name 2023
Blechnaceae	Not listed	Blechnum lineare (J.Sm.) Christenh. x Blechnum spinulosum Poir., newly recognised taxon for Qld
Blechnaceae	Not listed	Blechnum medium (R.Br.) Christenh. x Blechnum spinulosum Poir., newly recognised taxon for Qld
Blechnaceae	Not listed	Blechnum parrisiae Christenh. - Blechnum spinulosum Poir., newly recognised taxon for Qld
Thelypteridaceae	Pronephrium asperum	Abacopteris aspera (C.Presl) Ching
Thelypteridaceae	Amblovenatum queenslandicum	Christella queenslandica (Holltum) A.R.Field & Z.Bloesch
Thelypteridaceae	Pronephrium triphyllum	Grypothrix triphylla (Sw.) S.E.Fawc. & A.R.Sm.
Thelypteridaceae	Pneumatopteris pennigera	Pakau pennigera (G.Forst.) S.E.Fawc. & A.R.Sm.
Thelypteridaceae	Pneumatopteris costata	Reholttumia costata (Brack.) S.E.Fawc. & A.R.Sm.
Thelypteridaceae	Pneumatopteris sogerensis	Reholttumia sogerensis (Gepp) S.E.Fawc. & A.R.Sm.
Thelypteridaceae	Sphaerostephanos heterocarpus	Sphaerostephanos heterocarpos (Blume) Holttum, Latin ending corrected to agree with original publication
Thelypteridaceae	Sphaerostephanos unitus var. unitus	Strophocaulon unitum (L.) S.E.Fawc. & A.R.Sm.
Thelypteridaceae	Not listed	x Abacopterella altifrons T.A.Almeida & A.R.Field, newly described taxon

Algae

Family	Botanical name 2022	Botanical name 2023
Porolithaceae	Not listed	Porolithon lobulatum S.Y.Jeong & G.Diaz-Pulido, newly described species
Porolithaceae	Not listed	Porolithon pinnaculum S.Y.Jeong & G.Diaz-Pulido, newly described species
Porolithaceae	Not listed	Cladocopium proliferum LaJeunesse, C.C.Butler, Nitschke & van Oppen, newly described species

Flowering Plants

Family	Botanical name for Queensland 2022	Botanical name for Queensland 2023
Araliaceae	Hydrocotyle sp. (Lake Broadwater K.A.Williams AQ230829)	Hydrocotyle demissa A.R.Bean, newly described species
Araliaceae	Not listed	Hydrocotyle fontana A.R.Bean, newly described species
Araliaceae	Not listed	Hydrocotyle inops A.R.Bean, newly described species
Araliaceae	Not listed	Hydrocotyle maculosa A.R.Bean, newly described species
Asteraceae	Not listed	Olearia minor (Benth.) Lander, new record for Qld
Asteraceae	Dimorphotheca jucunda E.Phillips	Not listed, all specimens redetermined
Asteraceae	Gazania krebsiana Less.	Not listed, all specimens redetermined
Asteraceae	Tetramolopium sp. (Mt Bowen D.G.Fell+ DGF1224)	Tetramolopium ornans, newly described species
Boryaceae	Borya inopinata P.I.Forst. & E.J.Thomps.	Borya inopinata P.I.Forst. & E.J.Thomps., status changed from Critically Endangered to Vulnerable
Brassicaceae	Sisymbrium thellungii	Erucastrum austroafricanum Al-Shehbaz & Warwick
Brassicaceae	Lepidium monoplocoides	Lepidium yelarbonense Al-Shehbaz, newly described species

Cactaceae	Opuntia elata	Opuntia bonaerensis Speg.
Cyperaceae	Not listed	Carex brownii Tuck., new record for Qld
Cyperaceae	Cyperus kyllingia	Cyperus mindorensis (Steud.) Huygh
Cyperaceae	Not listed	Diplacrum blakei K.L.Wilson & R.L.Barrett, newly described species
Cyperaceae	Not listed	Lepidosperma lineare R.Br., new record for Qld
Cyperaceae	Scleria sp. (Laura N.Byrnes 3285)	Scleria psammitica R.Booth, newly described species
Goodeniaceae	Goodenia stirlingii F.M.Bailey	Goodenia stirlingii F.M.Bailey, status changed from Vulnerable to Near threatened
Lamiaceae	Coleus acariformis (P.I.Forst.) P.I.Forst.	Coleus acariformis (P.I.Forst.) P.I.Forst., status changed from Critically endangered to Endangered
Lamiaceae	Not listed	Coleus livingstonei A.J.Paton, newly classified as Formerly Naturalised
Lamiaceae	Callicarpa caudata Maxim.	Not listed, all specimens redetermined
Laxmanniaceae	Not listed	Lomandra beaniana Jian Wang ter, newly described species
Laxmanniaceae	Not listed	Lomandra grayi Jian Wang ter, newly described species
Laxmanniaceae	Not listed	Lomandra hispidula Jian Wang ter, newly described species
Leguminosae	Acacia guymeri Tindale	Acacia guymeri Tindale, status changed from Vulnerable to Near threatened
Leguminosae	Acacia lumholtzii Pedley	Acacia lumholtzii Pedley, status changed from Vulnerable to Critically endangered
Leguminosae	Acacia solenota Pedley	Acacia solenota Pedley, status changed from Vulnerable to Endangered
Leguminosae	Cajanus platycarpus (Benth.) Maesen	Cajanus platycarpus (Benth.) Maesen, status changed from Doubtfully naturalised to Formerly naturalised

Leguminosae	Maniltoa lenticellata var. lenticellata	Cynometra lenticellata (C.T.White) Rados. var. lenticellata
Leguminosae	Tephrosia sp. (Willowra G.M. Chippendale 4809)	Tephrosia insolens R.Butcher & Cowie, newly described species
Leguminosae	Tephrosia sp. (Magazine Hill P.Jones 365)	Tephrosia lithosperma R.Butcher & Cowie, newly described species
Lentibulariceae	Not listed	Utricularia brennanii R.W.Jobson & Baleeiro, newly described species
Lentibulariceae	Not listed	Utricularia dichotoma subsp. aquilonia R.W.Jobson, newly described subspecies
Lentibulariceae	Not listed	Utricularia dichotoma subsp. fontana R.W.Jobson, newly described subspecies
Lythraceae	Sonneratia sp. (McIvor River N.C.Duke AIM1248)	Not listed, specimen redetermined
Malvaceae	Abelmoschus moschatus subsp. moschatus	Abelmoschus moschatus Medik.
Malvaceae	Abelmoschus moschatus subsp. tuberosus	Abelmoschus rhodopetalus F.Muell.
Melastomataceae	Arthrostemma ciliatum Ruiz & Pav.	Arthrostemma ciliatum Ruiz & Pav., status changed from Doubtfully naturalised to Naturalised
Melastomataceae	Dissotis rotundifolia	Heterotis rotundifolia (Sm.) Jacq.-Fel.
Meliaceae	Not listed	Aglaia fellii W.E.Cooper & Joyce, newly described species
Meliaceae	Dysoxylum fraserianum	Didymocheton fraserianus (A.Juss.) Mabb. & Hauenschild
Meliaceae	Dysoxylum gaudichaudianum	Didymocheton gaudichaudianus A.Juss.
Meliaceae	Dysoxylum mollissimum subsp. molle	Didymocheton muelleri (Benth.) Mabb.
Meliaceae	Dysoxylum papuanum	Didymocheton papuanus (Merr. & L.M.Perry) Mabb.
Meliaceae	Dysoxylum pettigrewianum	Didymocheton pettigrewianus (F.M.Bailey) Hauenschild & Holzmeyer
Meliaceae	Dysoxylum rufum	Didymocheton rufus (A.Rich.) Harms

Meliaceae	Dysoxylum setosum	Didymocheton setosus (Span.) Mabb. & Holzmeyer
Meliaceae	Dysoxylum parasiticum	Epicharis parasitica (Osbeck) Mabb.
Meliaceae	Dysoxylum arborescens	Goniocheton arborescens Blume
Meliaceae	Dysoxylum alliaceum	Prasoxylon alliaceum (Blume) M.Roem.
Meliaceae	Dysoxylum klanderi	Prasoxylon klanderi (F.Muell.) Mabb. & Holzmeyer
Moraceae	Trophis scandens subsp. scandens	Malaisia scandens (Lour.) Planch. subsp. scandens
Myrtaceae	Eucalyptus sp. (Mt Hope Homestead E.J.Thompson+ BUC175)	Not listed, all specimens redetermined
Myrtaceae	Not listed	Eugenia capensis subsp. zeyheri (Harv.) F.White, new record for Qld
Myrtaceae	Leptospermum anfractum	Aggreflorum anfractum (A.R.Bean) Peter G.Wilson
Myrtaceae	Leptospermum brachyandrum	Aggreflorum brachyandrum (F.Muell.) Peter G.Wilson
Myrtaceae	Leptospermum whitei	Aggreflorum ellipticum (C.T.White & W.D.Francis) Peter G.Wilson
Myrtaceae	Leptospermum madidum subsp. madidum	Aggreflorum longifolium (C.T.White & W.D.Francis) Peter G.Wilson subsp. longifolium
Myrtaceae	Leptospermum luehmannii	Aggreflorum luehmannii (F.M.Bailey) Peter G.Wilson
Myrtaceae	Leptospermum pallidum	Aggreflorum pallidum (A.R.Bean) Peter G.Wilson
Myrtaceae	Leptospermum purpurascens	Aggreflorum purpurascens (Joy Thomps.) Peter G.Wilson
Myrtaceae	Leptospermum speciosum	Aggreflorum speciosum (Schauer) Peter G.Wilson
Myrtaceae	Leptospermum brevipes	Gaudium brevipes (F.Muell.) Peter G.Wilson
Myrtaceae	Leptospermum laevigatum	Gaudium laevigatum (Gaertn.) Peter G.Wilson
Myrtaceae	Leptospermum lamellatum	Gaudium lamellatum (Joy Thomps.) Peter G.Wilson

Myrtaceae	Leptospermum microcarpum	Gaudium microcarpum (Cheel) Peter G.Wilson
Myrtaceae	Leptospermum neglectum	Gaudium neglectum (Joy Thomps.) Peter G.Wilson
Myrtaceae	Leptospermum parvifolium	Gaudium parvifolium (Sm.) Peter G.Wilson
Myrtaceae	Leptospermum semibaccatum	Gaudium semibaccatum (Cheel) Peter G.Wilson
Myrtaceae	Leptospermum sericatum	Gaudium sericatum (Lindl.) Peter G.Wilson
Myrtaceae	Leptospermum trinervium	Gaudium trinervium (J.White) Peter G.Wilson
Myrtaceae	Leptospermum venustum	Gaudium venustum (A.R.Bean) Peter G.Wilson
Myrtaceae	Melaleuca sp. (Carnarvon NP M.B.Thomas 115)	Not listed, all specimens redetermined
Myrtaceae	Melaleuca sp. (Mt Stewart E.J.Thompson+ HUG406)	Not listed, all specimens redetermined
Myrtaceae	Melaleuca uxorum Craven, G.Holmes & Sankowsky	Melaleuca uxorum Craven, G.Holmes & Sankowsky, status changed from Endangered to Critically endangered
Myrtaceae	Mitrantia bilocularis Peter G.Wilson & B.Hyland	Mitrantia bilocularis Peter G.Wilson & B.Hyland, status changed from Endangered to Critically endangered
Olacaceae	Anacolosa papuanum	Anacolosa australis W.E.Cooper, newly described species
Onagraceae	Not listed	Ludwigia peruviana (L.) H.Hara, Doubtfully naturalised in Qld
Orchidaceae	Plexaure crassiuscula (Nicholls) M.A.Clem. & D.L.Jones	Phreatia crassiuscula Nicholls
Plantaginaceae	Achetaria azurea (Linden) V.C.Souza	Matourea azurea (Linden) Colletta & V.C.Souza
Plantaginaceae	Not listed	Plantago nupera Menkins, newly described species
Poaceae	Dimorphochloa sp. (Miles E.J.Thompson EJT888)	Cryptachne columboola E.J.Thomps.
Poaceae	Not listed	Enteropogon pubifolius E.J.Thomps., newly described species

Poaceae	Not listed	Enteropogon scabrilemma E.J.Thomps., newly described species
Poaceae	Paraneurachne muelleri (Hack.) S.T.Blake	Neurachne muelleri Hack.
Proteaceae	Hakea macrorrhyncha W.R.Barker	Hakea macrorrhyncha W.R.Barker, status changed from Vulnerable to Endangered
Rubiaceae	Not listed	Pomax ammophila Ngugi, newly described species
Rutaceae	Murraya crenulata	Bergera crenulata (Turcz.) F.J.Mou
Rutaceae	Euodia pubifolia T.G.Hartley	Euodia pubifolia T.G.Hartley, status changed from Vulnerable to Endangered
Rutaceae	Murraya ovatifoliolata	Murraya lucida (G.Forst.) Mabb.
Solanaceae	Not listed	Nicotiana clarksonii M.W.Chase & Christenh.
Solanaceae	Nicotiana sessilifolia	Nicotiana latifolia M.W.Chase and Christenh.
Solanaceae	Not listed	Nicotiana latzii M.W.Chase, R.W.Jobson & Christenh.
Thymelaeaceae	Pimelea leptospermoides F.Muell. subsp. leptospermoides	Pimelea leptospermoides F.Muell. subsp. leptospermoides, status changed from Near threatened to Vulnerable
Vitaceae	Cissus antarctica	Apocissus antarctica (Vent.) Jackes & Trias-Blasi
Vitaceae	Cissus hypoglauca	Apocissus hypoglauca (A.Gray) Jackes & Trias-Blasi
Vitaceae	Cissus oblonga	Apocissus oblonga (Benth.) Jackes & Trias-Blasi
Vitaceae	Cissus sterculiifolia	Apocissus sterculiifolia (F.Muell. ex. Benth.) Jackes & Trias-Blasi
Winteraceae	Bubbia whiteana A.C.Sm.	Bubbia whiteana A.C.Sm., status changed from Vulnerable to Critically endangered

Bryophytes and Liverworts

Family	Botanical name for Queensland 2022	Botanical name for Queensland 2023
Bryophytes		
Archidiaceae	Archidium sp. (Massy River J.R.Clarkson 2602)	Archidium elatum Dixon & Sainsbury
Liverworts		
Solenostomataceae	Not Listed	Solenostoma inundatum (Hook. f. & Taylor) Mitt. ex Steph., new record for Qld

Fungi and Lichens

Family	Botanical name for Queensland 2022	Botanical name for Queensland 2023
Fungi		
Agaricaceae	Not Listed	Lycoperdopsis arcyrioides Henn. & E.Nyman, new record for Qld
Chaetosphaeriaceae	Not listed	Kionochaeta caudaleonis, newly described species
Fomitopsidaceae	Rhodofomitopsis feei (Fr.) B.K.Cui, M.L.Han & Y.C.Dai	Fomitopsis feei (Fr.) Kreisel
Marasmiaceae	Not listed	Marasmius australotrichotus F.E.Guard, newly described species
Marasmiaceae	Not listed	Marasmius brunneolorobustus F.E.Guard, newly described species
Marasmiaceae	Not listed	Marasmius croceus G.Stev., new record for Qld
Marasmiaceae	Not listed	Marasmius leveilleanus (Berk.) Sacc. & Trotter, new record for Qld
Marasmiaceae	Not listed	Marasmius nigrobrunneus (Pat.) Sacc. , new record for Qld
Marasmiaceae	Not listed	Marasmius tenuissimus (Sacc.) Singer, new record for Qld
Polyporaceae	Not listed	Crassisporus leucoporus B.K.Cui & Xing Ji, new record for Qld
Polyporaceae	Not listed	Pycnoporus puniceus (Fr.) Ryvarden, new record for Qld

Lichens		
Arthoniaceae	Asteroporum rimale Müll.Arg.	Arthonia banksiae Müll.Arg.
Caliciaceae	Amandinea endachroa (Malme) Marbach	Buellia schaereri De Not.
Cladoniaceae	Cladonia tessellata Ahti & Kashiw.	Cladonia enantia Nyl.
Trypetheliaceae	Not listed	Astrothelium phlyctaena (Fée) Aptroot & Lücking, new record for Qld
Cladoniaceae	Cladonia sulcata A.W.Archer var. sulcata	Cladonia neozelandica var. sulcata (A.W.Archer) Kantvilas
Collemataceae	Collema coccophorum Tuck.	Enchylium coccophorum (Tuck.) Otálora, P.M.Jørg. & Wedin
Pannariaceae	Parmeliella brisbanensis (C.Knight) P.M.Jørg. & D.J.Galloway	Lepidocollema brisbanense (C.Knight) P.M.Jørg.
Pannariaceae	Parmeliella polyphyllina P.M.Jørg	Lepidocollema polyphyllinum (P.M.Jørg.) P.M.Jørg.
Pertusariaceae	Pertusaria albopunctata A.W.Archer & Elix	Lepra albopunctata (A.W.Archer & Elix) A.W.Archer & Elix
Pertusariaceae	Pertusaria asiana Vain.	Lepra asiana (Vain.) A.W.Archer & Elix
Pertusariaceae	Pertusaria commutata Müll.Arg.	Lepra commutata (Müll.Arg.) Lendemer & R.C.Harris
Pertusariaceae	Not listed	Lepra elatinica A.W.Archer & Elix, new record for Qld
Pertusariaceae	Pertusaria erythrella Müll.Arg.	Lepra erythrella (Müll.Arg.) I.Schmitt, B.P.Hodk. & Lumbsch
Pertusariaceae	Pertusaria lacerans Müll.Arg.	Lepra lacerans (Müll.Arg.) I.Schmitt, B.P.Hodk. & Lumbsch
Pertusariaceae	Pertusaria miscella A.W.Archer	Lepra miscella (A.W.Archer) I.Schmitt, B.P.Hodk. & Lumbsch
Pertusariaceae	Pertusaria muricata J.C.David	Lepra muricata (J.C.David) A.W.Archer & Elix
Pertusariaceae	Pertusaria novae-zelandiae Szatala	Lepra novae-zelandiae (Szatala) I.Schmitt, B.P.Hodk. & Lumbsch
Pertusariaceae	Pertusaria patellifera A W.Archer	Lepra patellifera (A.W.Archer) I.Schmitt & Lumbsch
Pertusariaceae	Pertusaria psoromica A.W.Archer & Elix	Lepra psoromica (A.W.Archer & Elix) A.W.Archer & Elix
Pertusariaceae	Pertusaria sublacerans A.W.Archer	Lepra sublacerans (A.W.Archer) A.W.Archer & Elix
Pertusariaceae	Pertusaria subventosa var. hypothamnolica A.W.Archer & Elix	Lepra subventosa var. hypothamnolica (A.W.Archer & Elix) A.W.Archer

		& Elix
Pertusariaceae	Pertusaria umbricola A.W.Archer & Elix	Lepra umbricola (A.W.Archer & Elix) A.W.Archer & Elix
Pertusariaceae	Pertusaria verdonii A.W.Archer	Lepra verdonii (A.W.Archer) I.Schmitt, B.P.Hodk. & Lumbsch
Pertusariaceae	Pertusaria wallamanensis Elix & A.W.Archer	Lepra wallamanensis (Elix & A.W.Archer) A.W.Archer & Elix
Opegraphaceae	Opegrapha interveniens Müll.Arg.	Opegrapha astraea Tuck.
Opegraphaceae	Opegrapha minutula Müll.Arg.	Opegrapha simplicior (Nyl.) Nyl.
Cladoniaceae	Cladia corallaizon F.Wilson ex Filson	Pulchrocladia corallaizon (Filson) S.Stenroos, Pino-Bodas & Ahti
Cladoniaceae	Cladia retipora (Labill.) Nyl	Pulchrocladia retipora (Labill.) S.Stenroos, Pino-Bodas & Ahti
Parmeliaceae	Relicinopsis intertexta (Mont. & Bosch) Elix & Verdon	Relicina intertexta (Mont. & Bosch) Kirika, Divakar & Lumbsch
Parmeliaceae	Relicinopsis malaccensis (Nyl.) Elix & Verdon	Relicina malaccensis (Nyl.) Kirika, Divakar & Lumbsch
Parmeliaceae	Relicinopsis rahengensis (Vain.) Elix & Verdon	Relicina rahengensis (Vain.) Kirika, Divakar & Lumbsch
Parmeliaceae	Relicinopsis stevensiae Elix & J.Johnst.	Relicina stevensiae (Elix & J.Johnst.) Kirika, Divakar & Lumbsch
Collemataceae	Leptogium gelatinosum (With.) J.R.Laundon	Scytinium gelatinosum (With.) Otálora, P.M.Jørg. & Wedin
Parmeliaceae	Not listed	Xanthoparmelia succedans Elix & J.Johnst., new record for Qld