

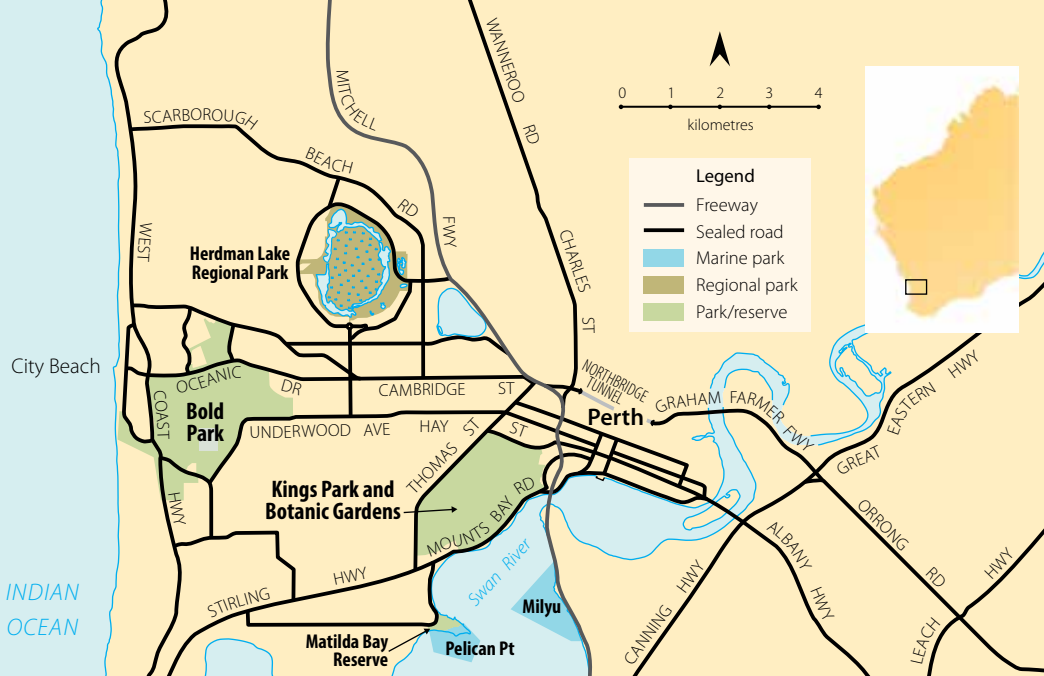
A large tree with thick, gnarled roots in a forest setting, with a mushroom in the foreground.

A wealth of new fungi in **Kings Park** and **Bold Park**

story and photos by Dr Neale Bougher

An incredible array of fungi accompanies the plants and animals in two of Perth's most prominent urban bushlands—Kings Park and Bold Park. Though always active, the fungi are mostly hidden from view until their fruit bodies adorn Perth's autumn and winter with a diverse and colourful show. Long-term fungi surveys in the parks are revealing a previously unrecognised diversity.





The Perth area is the traditional lands of the Whadjuk people of the Noongar nation who have names for some local fungi. For example, *Gyroporus occidentalis*, which instantly turns vivid purple when cut, is said to have been known as a Gnucho. Since European settlement, the flora and fauna of Kings Park and Bold Park have been well documented but little was known about the fungi in the parks until very recently.

The Botanic Gardens and Park Authority (BGPA) commissioned annual fungi surveys at Bold Park from 1999 and at Kings Park from 2009 to discover more about the fungi of these parks. A sharp-eyed team of more than 50 volunteers helped me survey bushland representing a range of different vegetation types. Descriptive features of the fungi were

recorded and photographed, and samples lodged at the Western Australian Herbarium for perpetual reference. The fungi were identified by studying their microscopic features and by comparing their DNA fingerprints against a world-wide database.

MORE TO COME

Each successive year of surveys revealed many more previously unseen fungi. This indicates that the surveys to date have captured only a fraction of the fungi species present at the parks. Nevertheless, a total of more than 530 fungi have been identified from the surveys at the parks so far. Many more fungi from the parks await detailed taxonomic studies required to identify them.

Kings Park and Bold Park have some different plants and vegetation types from each other and may be expected to harbour different fungi. Indeed, so far only about one-third of the fungi species recorded have been found at both parks. This proportion is likely to increase when more records of fungi are gained from further years of survey.

Most of the fungi recorded from the surveys are considered to be native to the parks, but there is no doubt that some have been introduced from elsewhere. For example, some exotic fungi were introduced into WA in the early 1900s to enable pine plantations to flourish. *Suillus granulatus* is one such species, and at Kings Park in autumn and winter it can

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Main Orange leaves fallen at the base of a fig tree in Kings Park, Perth, Western Australia. Photo – beau/Adobe Stock
Inset *Coprinopsis* aff. *stangliana*; *Leucocoprinus cretaceus*.

Above left Location of Kings Park and Bold Park in Perth.

Above *Hohenbuehelia petaloides* proliferating along Lovekin Drive in Kings Park in 2016.

Below left *Pseudosperma fissuratum* from Kings Park is one of about 100 new species of the fibre-cap fungi that have recently been discovered and named in Australia.



be seen fruiting in abundance on the lawns near the pine trees at Saw Avenue. Some of the fungi proliferating in woodchip beds and gardens at the parks also are possibly introduced, for example, mushroom-like fungi such as *Parasola conopilea*, the bird's nest fungus *Cyathus olla*, and less conspicuous skin-like fungi such as *Leucogyrophana pseudomollusca*.

FUNGI AND FIRE

During the surveys at Kings Park and Bold Park particular fungi were seen proliferating on burnt ground within a week or two after bushfires in the parks, including brightly-coloured species in stark contrast to the blackened earth such as *Pyronema omphalodes*. Such species are specialised fire-responsive fungi, and they



Do it yourself

A good way to see and learn about local fungi in these parks is to join fungi guided walks in autumn and winter by the Kings Park Guides and by the Friends of Bold Park (see 'Kings Parks Yorga's tour', *LANDSCOPE*, Summer 2019–20). For more information or to book a tour visit bgpa.wa.gov.au

Top The finding of *Leucogyrophana pseudomollusca* during the surveys was only the second record of this fungus in Australia.

Above *Gyroporus occidentalis* instantly turns vivid purple when cut. This species was only formally scientifically named in 2019, but is said to have been known much longer as a Gnucho by the local Whadjuk people of the Noongar nation.

Above right Carpets of *Parasola conopilea* appear in wood-chipped areas at the parks.

Right *Cyathus olla*—a bird's nest fungus—abounds in garden areas.





may have roles in re-establishing nutrient cycling pathways after bushfires.

Many remarkable fungi previously not known to occur in Australia and/or Western Australia have been discovered by the surveys at Kings Park and Bold Park. These first records range from tiny inconspicuous species such as *Coprinellus pyrphanthes*, to some larger and more conspicuous fungi that are quite well known elsewhere, for example *Leucocoprinus cretaceus*.

The surveys have also revealed some new species that were previously unknown to science. Recently, some of those have been formally described and named for the first time, for example *Gyroporus occidentalis*, and several species of fibre-cap fungi e.g., *Pseudosperma fissuratum*.

DISCOVERY AWAITS

The surveys undertaken at Kings Park and Bold Park so far have captured an incredible diversity of fungi, and it is likely

Top *Leucocoprinus cretaceus* is well known in other parts of the world but had not been known to occur in WA before it was found recently at Kings Park.

Above right *Pyronema omphalodes* briefly proliferates very soon after fire, and is followed soon after by several other fire-responsive fungi.

Right Crowded long spines on a fruit body of *Auriscalpium barbatum*, which has been found near sheoaks at the parks.

that many more await discovery at the parks. It makes good sense to learn more about the fungi, particularly about how they help to keep ecosystems healthy by ferrying nutrients across soil, litter and wood via networks of microscopic threads, and by linking intricate interdependencies between plants, animals and fungi. Such knowledge may be able to help fine-tune bushland management practices aimed at nurturing flora, fauna and fungi, and in turn help to keep Perth's bushlands healthy for the long-term.



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WA's beloved Bush Book series features a publication about fungi of the south-west forests. You can purchase one for \$6.95 from shop.dbca.wa.gov.au.

