ARTHURS SEAT U.F.W.M.I PROJECT

Significant Flora Survey and Report 2011-2012

Introduction

This survey was done as part of the Arthurs Seat Urban Fringe Weed Management Initiative 2011. It was undertaken between March 2011 and February 2012 and bounded the area of Arthurs Seat State Park between Cook Street, Purves Road, Waterfall Gully Road and the residential areas abutting the western side of the park.

Parks Victoria had previously recorded and monitored a number of significant species and further records (and potential records) were obtained from the State Flora Information System, biodiversity interactive maps, and reports, including Cook, 1993 and personal communications and ID's from Lynley Tozer and Russ Mawson (ANOS). Some species only came to light late in the survey.

This formed a baseline for targeted searches for specific species. During the course of this survey the extreme age of a number of individuals, particularly some of the ferns and also Musk Daisy Bushes, highlighted the need for the mapping of them to be included. Fern age and the ageing of Musk Daisy Bush have been used in the Yarra Ranges, to indicate age of surrounding forest rather than just looking at the overstory canopy age (Mueck et al, 1996).

It is worth keeping in mind the significance, in a broader sense of the Mornington Peninsula. Recent audits show that the Peninsula is the most biologically diverse 750 sq. km in the State. The Grassy Woodlands on Arthurs Seat is one of the most bio-diverse EVC's within the most bio-diverse area.

A number of threatened vegetation communities or areas which could potentially evolve into these are also present. The current DSE EVC mapping is at an inadequate scale to show some of these EVC's although DSE is in the process of reassessment. It was not undertaken as part of this survey but should be considered in the future.

The following information relates to significant species recorded during this survey. Attached to this report is a spreadsheet recording all of the known and potential species and the sources of that data.

- ***Acacia* sp.** It is unknown whether this is a hybrid Hop Wattle (*Acacia stricta*) or naturally occurring new record. This will need to be collected when seeding to confirm ID.

- ***Acacia verticillata var ovoidea*** **(Prickly Moses)** This form of Prickly Moses has a more restricted distribution than the common variety.

- ***Anogramma leptophylla*** **(Annual Fern)** This species is a new record for the Mornington Peninsula. It is found in very moist damp areas, often associated with *Todea barbara* in the lower sections of Waterfall Gully Creek.

- ***Arthropodium milleflorum*** **(Pale Vanilla Lily)** This species only occurs in a few locations. Where it does occur there is often a large population. There may be connections between this species and past cultural practices.

- ***Asplenium flabellifolium*** **(Necklace Fern)** This occurs along the sides of banks in the verges of the gullies, in sheltered locations and was identified as regionally significant by Cook (1993).

***Austrofestuca hookeriana* (Hookers Fescue)** This species is highly restricted within the Park and the region.

***Blechnum chambersii* (Lance Water Fern).** This species was found in only one location during this survey.

***Blechnum wattsii* (Hard Water Fern)** This is also a relatively restricted species within the park.


- ***Brachyscome decipiens* (Field Daisy)** The occurrence of this appears to be fairly localised within Grassy Woodland on the Cook St. spur. Two monitoring plots previously set up by Parks Vic. were re-located adjacent to the Cook St. track. The population on the south side of the track appears to be stable, whereas the population on the north side of the track has declined and no plants were found. Management records need to be checked to ascertain whether past methods for Sollya removal may have impacted on this species at this site


- ***Brachyscome spathulata (*Coarse Daisy)** Coarse Daisy appears to be less restricted within the park than the Field Daisy and is scattered throughout. We initially mapped every population to give an indication of its occurrence.


- ***Brunonia australis* (Blue Pincushion)** Only some of the Blue Pincushions were mapped. It appears however that many patches may be comprised of a single plant and that some of these patches may be quite old. Further research is required.

- ***Caladenia* spp.** This was not a good year for Caladenia flowering. They prefer drier summers and low numbers were recorded this year for Caladenia's across the state. However a number of these may be highly significant and further surveys need to be carried out both on previously recorded sites and in similar habitats.

- ***Chiloglottis* sp.** A colony of Bird Orchids with taller flowering stems was mapped during this survey. Further ID is required to ascertain its significance.

- ***Coprosma hirtella* (Rough Coprosma)** This species has a scattered distribution and is easily eliminated when woody weed control is undertaken. Very little is left in T.C McKellar Reserve and specimens have been removed on the Kings Falls circuit track. All contractors working on these sites should be properly inducted to avoid this situation.

- ***Cyathea australis* (Rough Tree Fern)** Although Cyathea has a scattered distribution along many of the damper sites within the park, there are some very old specimens in the lower Forgotten Spur Creek and Waterfall Gully Creek which were considered significant, due to their age. Studies in the Yarra Ranges indicate that they grow between 2.2 – 3.8 cm/yr which makes many of these individuals in the 200 – 300 year old range. There is also the suggestion that the growth rate may decline with increasing age (Mueck et al 1996). Many are either in decline or have already died, due to changes in hydrology in the upper headwaters of these creeks. Dams, clearance for agriculture etc all affect water flow and quality. Although in a wet year this impact may be lessened, the effect on the long term viability of these and other ferns in the park is impeded during times of drought i.e. it is the extremes that create extinctions, not the average years.

- ***Cyperus lucidus* (Leafy Flat sedge)** This species is restricted to wet boggy areas at the base of the creeklines just above the residential neighbours
- ***Desmodium varians* (Slender Tick Trefoil)** This has not previously been mapped within the Arthurs Seat State Park. This is a "k" listed species and was found growing along the lower edges of the gully below the Cook Street track.

- ***Dicksonia antartica*** **(Soft Tree Fern)** These have a restricted occurrence within the park and across the wider Mornington Peninsula, but are suffering a similar decline to the Cyathea.

- ***Doodia australis*** **(Rasp Fern)** This is a new record for this section of the Park, with a small patch in the Forgotten Spur Creek and an extensive population along some sections of the Waterfall Gully Creek.

- ***Eucalyptus sp.***A number of individuals were found that although similar to Swamp Gum (*Eucalyptus ovata*) had leaves smelling strongly of eucalyptus. Sawmp Gums have very few oil glands and characteristically very little smell. These need further research to determine their identity.

- ***Euphrasia collina*** **ssp.** ***muelleri*** **(Purple Eyebright)** The original occurrences of the Purple Eyebright were re-located on the Seamists Drive site. Most of these appear to be restricted to where the vehicle (?slashers) tracks have now compacted a path, which the Kangaroos are using. No individuals were found during this survey. Perhaps consideration could be given to fencing this area off from both vehicles and macropods. This will require removing some of the barbed wire fencing in adjacent sections to allow for macropod movement around the site.

- ***Exocarpos stricta*** **(Pale-fruit Ballart)** Only one specimen was found during this survey. Like the Cherry Ballart this species is parasitic and susceptible to herbicide usage within its root zone or through the roots of trees or vegetation it has parasitised.

- ***Geranium* spp.** Very few collections occur of indigenous Geraniums from the Mornington Peninsula. The Flora of Victoria lists only two local species and the more they are studied, the more species appear. All are considered of at least regional significance. (Lynley Tozer pers com.)


- ***Glycine latrobiana* (Clover Glycine)** This species is predominantly on the Cook Street track in and around the SPIFFA block and has recently appeared on the north side of the track. These plants have never been observed to flower and have a cleistogamous habit. It is likely that it behaves as a sub- shrub and one plant may cover a large area. This needs further research. It is at risk from trackside works and the movement of water carrying gravel, nutrients and weed seeds on to the site. Three years in a row, track prunings have been dumped on top of the main population, despite the pink tags and ongoing monitoting and weed management.


- ***Isopogon ceratophylla* (Horny Cone Bush)** This species is considered regionally significant and only appears to occur in low numbers within the park.

- ***Lomandra multiflora*** (**Many-flowered Mat-rush)** Has a localised occurrence including a small patch at McLarens Dam. It is at risk of slashing and vehicle access to the dam edge.

- ***Microseris* sp. (Yam Daisy)** This species was mapped due to its scattered occurrence and the likelihood of taxonomic division within the Microseris genus.


- ***Myriophyllum simulans (*Milfoil)** This was the only record found during this survey. It occurs in the constructed dam in T.C Mc Kellar Reserve, where *Myriophyllum amphibious (*Amphibious Milfoil) was previously found by Damien Cook in 1993. Prior to dam construction this area possibly supported Wet Heathland.

- ***Olearia argophylla* (Musk Daisy Bush)** has a scattered occurrence along drainage lines and in protected damp soaks throughout the park. They are associated, in these patches, with *Pomaderris aspera* (Hazel Pomaderris) and young Rough Tree Ferns. These small fairly young patches are likely, over time, to evolve into a damper forest type and in terms of management, would ideally, be protected from management burns. Along the creek lines, there are a number of very old Musk Daisy Bushes which were mapped during this survey. This species is known for its longevity

- ***Oxalis rubens* (Dune Wood Sorrel)** This species potentially occurs within the park. This is a difficult Genus to identify to species level without fertile material. Many of the individuals photographed do however have consistent characteristics and collection of fertile material is required for confirmation

- ***Pelargonium inodorum (*Kopata)** This species is generally only recorded after fire. However it is regenerating in areas where previous Pittosporum control has been undertaken. As it is a colonizing species and adapted to particular disturbance regimes, it may naturally decline at these sites over time, only to appear in another area where sensitive weed control has been undertaken.


- ***Persoonia juniperina* (Prickly Geebung)** This species is scattered in low numbers within this section of the park. All records were mapped in this survey.

- ***Pimelea octophylla* (Woolly Rice-flower)** This species is also scattered in low numbers and needs further mapping as it is only obvious when in flower.

- ***Polystichum proliferum* (Mother Shield Fern)** This species forms large colonies but is restricted in its occurrence within the park.

- ***Pteris tremula* (Tender Brake)** This species has a localised occurrence within this section of the park, in damp protected sites.



- ***Pterostylis spp.*** A number of significant Greenhoods occur or have the potential to occur within this section of the park. This was not an ideal year for this group of plants. The Cobra Greenhood's flowering season appears to be climatically affected and this year was found flowering in a garden at McCrae in February! More targeted surveys should be undertaken every few months at known sites, rather than relying on the accepted flowering times.

- ***Pultenea sp* (Bush Pea)** A localised patch of this species occurs in T.C.McKellar Reserve. It is possibly *Pultenea humilis* (Dwarf Bush Pea). However it appears to have some anomalous characteristics. The same species also occurs on the Purves Road Euphrasia site.

- ***Ranunculus* sp. (Buttercup)** Three occurrences of Ranunculus sp. were mapped during this survey. These were unable to be identified, due to lack of fertile material.

- ***Rytidosperma dimidiatum* (Tasmanian Wallaby-Grass)** was previously recorded on Arthurs Seat (BIM). Information about this species is extremely limited and due to its restricted distribution within the State and the current Taxonomic revisions within the Wallaby Grass group, positive identification is a problem.

- ***Solanum vescum* (Ganyang)** This species has a restricted range regionally, with only two current known Mornington Peninsula records on the FIS both of which are in post-fire sites, one on the burnt section of the freeway at McCrae and the other in the burnt area above McLarens Dam. Care needs to be taken that any contractors or Friends groups working in these areas, are made fully aware of the identification and location of this species. The population is very small with only three plants evident, and these individuals need to be allowed to fully mature and set fruit, so that they are retained on site within the seed-bank. Any future burns within the ASSP should be monitored post-fire for this species, before any weed control programs are undertaken.

- ***Stylidium dilatatum* (Tasmanian Trigger Plant)** This species has a restricted occurrence within the State and as with the *Rytidosperma dimidiatum,* is more predominant in Tasmania. This is probably related to vegetation connections prior to the flooding of the land bridge between Victoria and Tasmania. The significance and occurrence of this species came to light late in the survey after flowering had already taken place. Further surveys are required to delineate its distribution within the Park from the more common Grass Trigger Plant (*Stylidium graminifolium*)

- ***Tetratheca ciliata* (Pink Bells)** This species is represented by only a few localised occurrences within the park.

- ***Thelymitra* spp. (Sun Orchid)** The Tall Sun Orchid was identified as regionally significant by Cook (1993). It appears to be restricted to T.C.McKellar Reserve within this section of the Park where healthy populations occur. Many Sun Orchids will not open other than on warm sunny days and then often for only a few hours. A number of different species appear to occur within the Park with particular interest being on the Sun Orchids on the verges of the dam in T.C. McKellar. This will require further targeted surveys when the weather is conducive.

- ***Thysanotus tuberosus* (Common Fringe-lily)** Only a small number of this species were recorded during this survey.

- ***Todea barbara* (King Fern)** Kings Falls is well named, after the King Fern which occurs there. This species is well known for being very long-lived and slow growing. Assessing the age is difficult, requiring carbon dating of material collected from the base of the trunk. One trunk consists of many crowns. Many individuals found within the Park may be many hundreds, if not 1000s of years old. There appears to be very little natural recruitment and many specimens have died or are in decline (as previously discussed).

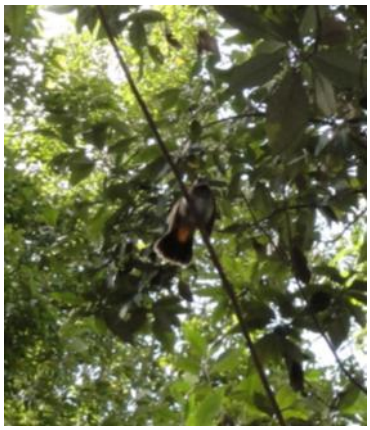
- ***Viminaria juncea* (Golden Spray)** A small population of 6 plants was recorded in only one location, adjacent to the dam in T C McKellar. This species was identified as regionally significant by Cook (1993).

- ***Xanthosia sp* (Xanthosia)** Two populations of Xanthosia were found, but were unable to be identified, due to lack of fertile material. Further targeted survey is required.

- **Unknown ferns.** Two species were found but were unable to be identified due to lack of sori.


The fern on the left was found growing amongst *Asparagus scandens* (Myrsiphyllum). This population could easily be impacted on if foliar spraying of the Myrsiphyllum was undertaken. The other fern is from below T C Mckellar dam in the Riparian Scrub

- **Rufous Fantail, Bassian Thrush and burrowing crayfish** were also noted and their locations were recorded.



Rufous Fantails were observed in the old groves of Musk Daisy Bush in the middle reaches of Forgotten Spur Creek. Any woody weed removal in this area should be restricted to frill and fill so as to maintain nesting habitat and protection for this species.

The Bassian Thrush and what appears to be two species of **burrowing cray** (one with raised tunnel entrances and one with level entrances) were observed in a patch of Riparian Scrub along the northern section of TC Mckellar. It was disturbing to see that horses are accessing this track creating compaction, increased nutrient, and weed seed sources



General Management Implications

- Although the Eucalypt canopy maybe relatively young (with the exception of some individuals) across this section of the Arthur's Seat State Park, the age of some of the understory components, in particular the ferns) are consistent with Old Growth Forests and Woodlands. Although many of the species present are adapted to natural fire events and frequencies, a fuel reduction burn in a dry season could be disastrous for many of them and lead to a drying out of the micro habitat leading to further decline and an increased risk of future fires creating incursions into this protected ecosystem. The Waterfall Gully Creek Line has been severely impacted on by the private dams in the upper catchment. Although they may appear to be recovering in this high rainfall cycle they suffered major decline through the last drought period
- Barbed wire fences both along the park boundary and old internal fences create wild life hazards and upper strands or fences no longer required should be either cut up on site and pushed to the ground or removed off the site if this can be done with minimal disturbance
- Disturbance inevitably leads to weed invasion and methods of slashing of fire clearance should err on the side of minimal disturbance. Timing of these works and the height of the blades are also important considerations and can be used to enhance biodiversity rather than having a negative impact. For example a high slash of Sweet Vernal Grass prior to seeding can lead to a decline in this summer dry weed leading to greater indigenous grass cover, increased biodiversity and lower fire risk
- All contractors, staff and volunteers need to be properly inducted in the threatened species present within the park. This will result in more complete records with further locations added. It will also protect rare species being removed because they were mistaken for weeds. The Rough Coprosma is particularly at risk and large numbers have been removed over the past ten years, with some on the Kings Falls Circuit Track being removed within the last year. It will also protect track verge species from being impacted upon by track clearance
- A large number of threatened species occur around the T C McKellar dam. Any works undertaken within this area need to be undertaken with care. If it is being used as a source of water for fire fighting use the water should be tested for Cinnamon Fungus (*Phytophthora cinnamomi*) to ensure there is no contamination
- Fauna records should be added to the fauna data base and the crayfish identification confirmed by a fauna expert

References

Cook D (1993) Vegetation of T C McKellar Flora Reserve, Arthurs Seat State Park unpublished report for Southern Tree Preservation Society

Mueck S, Ough K & Banks J (1996) *How Old Are Wet Forest Understories?* Aust Journal of Ecology **21:** 345-348

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FIS stands for Flora Information Systems

BIM stands for Biodiversity Interactive Map

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