

Inglewood Triangle Status Report 2019- Friends of Inglewood Triangle

Inglewood Triangle is a remnant patch of bushland of about 1.5 ha located only 5 km northeast of the Perth GPO, bounded by Walter Road, Hamer Parade and Eighth Avenue in Inglewood (Fig. 1). It lies on the western edge of the Bassendean sand formation within the greater Swan Coastal Plain and is an example of an intact Banksia Woodland community. Along with the Banksias there are Jarrah, Balgas, Christmas trees, orchids, an extensive ground cover of rushes and sedges, plus reptiles and birds. The bushland at Inglewood Triangle is important because it is in good condition considering it is located within an established urban area. It also forms part of an ecological corridor with Mount Lawley Golf Course, Terry Tyzack Aquatic Centre, Macauley Park, Hamer Park and Yokine Reserve. The history of the establishment of Reserve "A" 18325 dates from the 1990s (for more details see, UBC, 2018).



Figure 1: Location of Inglewood Triangle

Since 2007 The Friends of Inglewood Triangle (FoIT) have contributed hundreds of hours of volunteer time to the management of the reserve. The external perimeter fence replaced several years ago. Two pathways divide the Triangle into four sections which are used for management planning (Fig. 2). Internal fencing was installed along three sections in August 2015. Fencing has greatly improved management of the Triangle and enhanced the work of volunteers, particularly by limiting the spread of weeds.

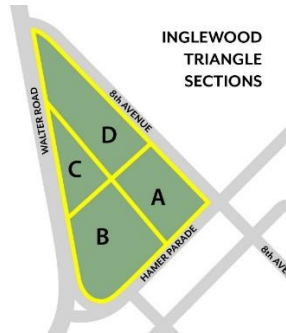


Figure 2: Management Sections of the Inglewood Triangle

Systemic weed spraying ceased in 2010 with most weeding carried out by hand by volunteers and only selective spraying. Hand-weeding has been very successful with three Sections of the Triangle having been cleared of dominant weeds, allowing the return of native sedges and many other species (Fig. 3). Interpretative signage was installed in 2014 with a DBCA grant. Areas of bare ground have now been revegetated with 8 years of plantings. Volunteers have been hand-watering seedlings for about 6 years, because of very low rates of seedling survival over summer months, originally carting water from home. Hand-watering did increase the survival rate but as increased seedlings were planted in following years carting water became untenable. Provision of a water tank by CoS four years ago is greatly appreciated by FoIT and seedling survival rates have greatly improved. After 10 years of continuous operation the Friends of Inglewood Triangle, in partnership with the City of Stirling (CoS), have stabilised the reserve to be enjoyed by the community into the future. Inglewood Triangle is a model for successful community-led bushcare and preservation of urban bushland. This status report documents the end of the revegetation phase and the beginning of a maintenance phase, during which FoIT will continue to weed but will take on some management activities at the nearby bushland behind Terry Tyzack Aquatic Centre. It also outlines requirements for the maintenance phase at the Triangle.



Figure 3: Section B looking from the intersection (Left: heavy veldt grass in 2014) and (Right: return of native sedges in 2018).

Summary of Volunteer Work 2018

The FoIT currently has about 15 financial members but consists of a larger group of around 50 and up to 20 who volunteer regularly onsite. Volunteers bring family members, including children, and the occasional visitor to assist with watering. In the summer following planting of 1000 seedling in June 2017, two watering teams alternated weeks to water seedlings from the CoS provided tanks until March 2018. Some ad hoc watering sessions were also held in early 2018 for extreme temperature days. We have regularly had up to ten waterers who all bring their own buckets to measure around 700ml per seedling. Weeding commenced just after the first rains in 2018 and continued until November. A continued focus on Veldt grass and Fumaria has kept these weeds under control. Christine Richardson and Chris Allbeury have collected rubbish each weekend, provided weed identification training to new volunteers in 2018 and directed the priorities for weed species removal. In March the 8th consecutive Clean Up Australia day was held at the Triangle. 2018 marked the eighth year of planting with approximately 300 seedlings planted in Section B corner by FoIT volunteers (500 seedlings were planted in 2017). FoIT has worked with Perth College teacher, Suzanne Bushby, for 8 years to provide opportunities for kindergarten children to experience hands-on bush activities at the Triangle. In 2018 the PC Kindy girls assisted with planting 200 seedlings in Section C.

In 2019 FoIT attempted to summarise the volunteer labour put in over the preceding year. Costed at a modest rate of \$50 per hour, the volunteers have invested \$72,650 hours of their time to assist with the management of the Inglewood Triangle (Table 1).

Table 1: Summary of Volunteer Work 2018*

Activities	Weeks	No of Friends	Day	Hours	Total Hours
Weekly Activities					
Weekend weeding	35	6	Sunday	2	420
Weeding at other times	15	1	Various	6	90
Watering seedlings	25	10	Various	1	250
Rubbish collection	52	1.5	Saturday	1	78
Other activities done throughout the year					
Volunteering for schools	6	4	Various	3	72
Meetings with City, Councilors, MP's and others	8	4	Various	3	96
Admin for weeding/watering rosters	45	2	Various	1.5	135
Admin for newsletter	4	1	Various	3	12
iNaturalist updates		2	Various	75	150
Field Guide Maintenance		1	Various	150	150
				Total hours	1453
Estimated value of volunteer hours				Rate/ hour	\$50
Total					\$72,650

*estimate from Chris Allbeury's records and consultation with members.

Documentation of Biodiversity in the Inglewood Triangle

The Triangle is home to 110 native species, demonstrating the high biodiversity of this small urban remnant. FoIT have produced three field guides which show the plants, animals and weeds present in the Triangle. A field guide to Fungi is in preparation. The guides are now used by other Friends groups for identification.

Field Guide to the Plants of Inglewood Triangle Bushland.

Field Guide to the Birds of Inglewood Triangle.

Guide to the Weeds of Inglewood Triangle Bushland.

These can be accessed from the FoIT site on the Urban Bushland Council website (<https://www.bushlandperth.org.au/treasures/inglewood-triangle>)

Graham Zemunik established an iNaturalist project in 2017 and four members are uploading images of plants and animals of the Triangle. 135 species have been recorded. This can be accessed at: <https://www.inaturalist.org/projects/inglewood-triangle>

New species identified 2018/9

Following the fauna survey in 2016 which established that scorpions were present in the Triangle, in 2018 and 2019, Jane Coffey led several night scorpion expeditions utilising UV lights to spot fluorescent scorpions. Several species have been identified including *Urodacus novaehollandiae* was positively identified (Fig. 4). Some specimens were several cm long. Members have learned to identify the letterbox shaped burrows of the local scorpions and refer to a “scorpion village” on the perimeter of Section D amongst dead wood (Fig. 4).



Figure 4: *Urodacus novaehollandiae* and burrow Photos: Jane Coffey

Trapdoor spiders (*Mygalamorphae*) have also been recently found in Section D, they are yet to be formally identified (Fig. 5). Lack of disturbance is important for persistence of these spiders which live their whole lives in one burrow and consequently are rare in urban bushland (Mason et al, 2018). Their occurrence in Section D could be an unintended benefit of less management activities in this area.



Figure 5: Trapdoor spider and well disguised burrow (closed-middle, open-right), Section D 2019.

New plant species continue to be discovered in the Triangle. In September 2017 Blue Scented Sun Orchid (*Thelymitra macrophylla*) was noted (Fig. 6) but it was not found in 2018.



Figure 6: Blue Scented Sun Orchid (*Thelymitra macrophylla*) in 2017. Photos: Chris Allbeury

In 2018 Blue Fairy Orchid (*Pheladenia deformis*) and Sugar Orchid (*Ericksonella saccharata*) were found (Fig. 7). The Green Spider Orchid (*Caladenia falcata*) was found in 2017 and reappeared in 2018.



Figure 7: *Ericksonella saccharata* (left) and *Pheladenia deformis* (right) in July 2018. Photos: Graham Zeminuk.

More detailed investigation of fungi in the Triangle commenced in 2018 with numerous species observed over the Winter months. In addition to commonly recognised fungi like earthballs, careful observation revealed slime moulds in all sections, but particularly on dead Bankisas in Section D. When fully identified, these will be added to a new Field Guide (Fig. 8). The presence of multiple fungi species is further indication of the biodiversity and health of this bushland, where natural processes of decomposition are able to take place.



Figure 8: Red Raspberry Slime (*Tubifera ferruginosa*) and yet unidentified slime mould, section D August 2018. Photos: Jane Coffey.

Maintenance Plans

With the completion of the planting program in 2018, watering of seedlings will continue until the end of April 2019 depending on good soil moisture. Winter weeding will recommence focussing on the seedling beds in Section B with a continued focus on Veldt Grass to reduce seeding. The CoS has advised that revegetation is completed at the Triangle and that it would move to a maintenance phase. FoIT discussed maintenance needs from this point at their Annual Planning Meeting and at onsite meetings subsequently. CoS will undertake Black Flag management in D and will need to provide some weeding assistance through the year (Green Army or similar).

Dieback Threats and Management

Repeated concerns have been raised about dieback in the Triangle. Section D is known to have dieback and the CoS advised that testing would occur in 2018. Long term members can identify trees which have died quickly, for example Fig. 9. In February, 2019 a walkthrough meeting was held with FoIT and Bruno Rikli from the Dieback Working Group. Bruno confirmed that the multiple deaths in Section D were likely to be due to dieback. He pointed out different aged trees which had been affected and showed us symptoms on indicator plants like *Jacksonia* and *Balga*.



Figure 9: *Banksia grandis* in Section D 2017 (left) and 2019 (right). Note this is the same tree photographed from different angles. Photos: Jane Coffey.

Bruno examined some isolated tree deaths in B and C and suggested they were more likely to be due to canker, although dieback is known to occur in a mosaic pattern in bushland (Fig. 10).



Figure 10 : *Banksia attenuata* Section B in 2016 (left) and 2019 (right). Photos: Jane Coffey

Internal fencing

Observation by FoIT volunteers over years have confirmed that revegetation outcome have been improved by the internal fencing which acts to direct pedestrians along the hard paths.

Unfortunately, the only section unfenced is the worst dieback affected section –D. This allows free access to pedestrians and their dogs, posing a dieback spread risk. FoIT ask that CoS complete a section of internal fencing along D to limit the spread of dieback in the maintenance phase of management. This area is also being treated for Black Flag and it is desirable to restrict access to sprayed areas. FoIT does not believe the internal fencing disadvantages pedestrians dog owners as there are large recreation areas in McCauley Park and Hamer Park which are within meters of the

Triangle. We have observed many visitors admiring the flowering plants in Spring from vantage points along the internal fencing. Despite the presence of disease in section D, it contributes biodiversity to the Triangle. Scorpions and trapdoor spiders occur more frequently in this section. This is also the section where slime moulds have been found.

Proposed Action: Completion of internal fencing to Section D.

Shoe cleaning stations

The most important management strategy is to prevent spread of the dieback fungus to new areas. Shoe brush stations provided by CoS at the entrances. These could be improved by placing a slightly raised metal or heavy duty plastic grill onto the blue metal base (an example shown in Fig. 11). This allows soil particles to drop through the grill and not be walked into the site by the next visitor. The grill area could be installed abutting the brush posts and periodically disinfected. We believe this is a modest improvement to the site which can be easily maintained. Improved dieback control will be necessary for volunteers who may be moving between the Triangle and the bushland behind the Terry Tyzack Aquatic Centre. A further improvement would be to add a brush on a chain for children who find it difficult to use the post mounted brushes.



Figure 11: Grated shoe cleaning station to prevent spread from dislodged material. Photo: State NRMWA

Proposed Action: Installation of plastic grill under shoe cleaning brushes.

Phosphite injection

Bruno also recommended phosphite treatment in the most affected area by tree injection. This would be section D and possibly a buffer along C. The Parks and Wildlife Service lists phosphite treatment as one strategy in the management of dieback, with tree injection offering protection for up to five years (DBCA, 2019). As the Inglewood Triangle is a small area with a large investment in volunteer time, FoIT asks CoS to investigate this option or to support us to apply for an NRM grant to cover the cost. Two FoIT members have had phosphite injection training and could assist with a treatment event, thus reducing costs.

Proposed Action: Investigation of phosphite injection to slow the spread of dieback

Dead Wood

Dead trees in the Triangle provide essential habitat for insects and arachnids. Areas of fallen branches are popular locations for scorpion burrows (Fig. 4). In 2018 Jane Coffey commenced documentation of fungi in the Triangle and dead branches revealed a surprising diversity of fungi in Winter, including slime moulds (Fig. 8). FoIT accepts that some fuel reduction may be necessary, but

ask that this be done in collaboration with the group to avoid areas of known biodiversity and to ensure that dieback hygiene is carried out with a knowledge of infected areas.

Proposed Action: Liaison of CoS with FoIT for any dead wood removal.

Weed control

Hand-weeding of the Inglewood Triangle has proved a successful strategy to decrease weeds and reduce the fuel load thus reducing fire risk whilst avoiding damage to perennial vegetation from previously used metasulphon. Over recent years the friends have adopted a multi-phased approach to reducing the most invasive weeds. On request, the CoS has engaged NAMS to spot spray Veldt grass before the seed heads develop. This together with focused hand weeding where Veldt grass is growing amongst native vegetation has been very successful in reducing the seedbank and pulling Veldt seedlings before they become too large. Hand weeding minimises the disturbance of the surrounding soil. FoIT tries to avoid any seeding of Geraldton Carnation Weed, Wild Radish, Fleabane or Black Flag. Our intention is to maintain the weed load at the Triangle at these reduced levels but this requires constant weeding throughout the cooler months. Due to the long lasting weed seedbank, it is likely that weeds would soon return if the weeding effort is reduced. Also, the huge weed load across the road at the Golf Course means that we are constantly weeding along the Walter Road boundary. CoS will take responsibility for the eradication of Black Flag which may take up to 7 years to eliminate the stored corms in the soil. Therefore FoIT will still rely on CoS to weed in D until this can be turned over to hand-weeding. A map will be provided later to CoS on the location of trapdoor spiders in Section D to avoid disturbance during weeding and spraying.

Proposed Action: Black Flag spraying and volunteer assistance for Winter weeding by CoS.

References

- DBCA (2019). Phosphite and Phytophthora dieback. Retrieved from:
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- Mason, L., Wardell-Johnson, G. and York-Main, B. (2018). The longest-lived spider: mygalomorphs dig deep, and persevere. *Pacific Conservation Biology*. 24, 203–206.
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