

19 March 2024

Dylan Asgill-Tucker  
Specialist Environment and Approvals  
HanRoy Iron Ore Projects Pty Ltd

Hi Dylan,

As per our recent conversation, Spectrum Ecology & Spatial (Spectrum) has prepared responses to the discrepancies in some of the conservation significant flora counts between the Maia Environmental Consultancy (Maia) (2022) Mine and Borefield flora and vegetation report and the IBSA data package provided to HanRoy Iron Ore Projects Pty Ltd (HanRoy). Scott Hitchcock (formerly from Maia) has reviewed the GIS data package against the data that was used for the species counts in the report. The results of the review along with relevant comments addressing any changes, are included in Table 1. A few species in the GIS data were found to have incorrect counts, and these have been updated. A few records appeared to be duplicated in the data and these have also been rectified.

Three species were removed from the updated data. One was removed as it is no longer a significant species in Western Australia (*Goodenia nuda*) and two were included in error and weren't discussed in the Maia (2022) report. Maia had collected sterile specimens of *Bulbostylis* sp. from an exploration targeted flora survey within the Mine and Borefield Survey Area (MBSA) and considered it to be a potential taxon of interest (TOI). During a targeted flora survey in 2021, locations for *Bulbostylis* sp. were visited and fertile collections were made, which were confirmed to be a common species of *Bulbostylis*. Maia also revisited locations of *Goodenia ?lyrata* which were collected in 2012 and identified from sterile specimens. Flowering specimens were later collected, and they were identified as the common species, *Goodenia prostrata*.

Table 1: Differences in Conservation Significant Flora Counts from the Mine and Borefield Survey Area.

Conservation significant species	Rank	Maia (2022) counts	Maia IBSA data counts	Updated IBSA counts	Comment
<i>Seringia exastia</i>	NA	11	11	0	No longer listed as a threatened species under the BC Act and pending removal from federal EPBC Act.
<i>Seringea ?exastia</i>		370	370	0	
<i>Calotis squamigera</i>	P1	3	3	3	No change.
<i>Helichrysum oligochaetum</i>	P1	12	8	12	Only Maia records from the Mine and Borefield and exploration targeted flora surveys were included in the GIS data. Lyons (2015) records have now been added.
<i>Josephinia</i> sp. Woodstock (A.A. Mitchell PRP 989)	P1	1	1	1	No change.
<i>Rhodanthe ascendens</i>	P1	1	0	1	Database (41-1120FL) record has been added to the data.
<i>Triodia veniciae</i>	P1	1,743	3,061	1,743	Incorrect counts were assigned to some points and there were also eight duplicate records in the data. These numbers have been updated with the counts recorded in the field and used for the report and the duplicates have been removed.
<i>Teucrium pilbaranum</i>	P2	2,868,083	92,832	2,868,083	<p>A number of points in the GIS data were assigned a single count instead of the population estimate counts. Population estimates were assessed by counting individuals from 32 5m x 5m quadrats and getting an average count of individuals per 25m<sup>2</sup>. The boundary of large populations was walked in the field and digitised in ArcGis software. The area of the population was calculated and the average number of individuals per 25m<sup>2</sup> was extrapolated for the population.</p> <p>The counts have now been updated. Where a single point was originally used to identify a population, all boundary points have now been included and the estimated population count has been distributed among each point.</p>
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	14	14	14	No change.
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	42	76	45	Six duplicate points were removed from the data and one point with a single count was missing from the data and has now been added. Three locations from the Power Line

Conservation significant species	Rank	Maia (2022) counts	Maia IBSA data counts	Updated IBSA counts	Comment
					Corridor which were not included in the original counts have been added to the data. The data counts for this species are three individuals higher than the MBSA report. These records have also been included as part of the Rail and Hub report.
<i>Eragrostis crateriformis</i>	P3	4	4	4	No change.
<i>Eragrostis</i> sp. Erect spikelets (P.K. Latz 2122)	P3	1	1	1	No change.
<i>Euphorbia australis</i> var. <i>glabra</i>	P3	3,346	920	3,346	Where a single point was originally used to identify a population, all boundary points have now been included and the estimated population count has been distributed among each point. Population estimates were assessed by counting individuals from 17 5m x 5m quadrats and getting an average count of individuals per 25m2. The boundary of large populations was walked in the field and digitised in ArcGis software. The area of the population was calculated and the average number of individuals per 25m2 was extrapolated for the population.
<i>Glycine falcata</i>	P3	122	122	122	No change.
<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727)	P3	23	6	23	One of the two records had an incorrect count and was updated to reflect the count recorded in the field.
<i>Iotasperma sessilifolium</i>	P3	1	0	1	Database (41-1120FL) record has been added to the data.
<i>Rostellularia adscendens</i> var. <i>latifolia</i>	P3	2,841	2831	2,841	Ten Ecologia (2008) records from Murrays Hill have been added to the data.
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	P3	522	79	522	One of the points in the GIS data were assigned a single count instead of the population estimate count and this has been updated. Where a single point was originally used to identify a population, all population points have now been included and the estimated population count has been distributed among each point.
<i>Triodia basitricha</i>	P3	1,241	2450	1,241	Incorrect counts were assigned to some points in the data. These numbers have been updated with the counts recorded in the field and used for the report.

Conservation significant species	Rank	Maia (2022) counts	Maia IBSA data counts	Updated IBSA counts	Comment
<i>Bulbostylis burbidgeae</i> (inc atypical form)	P4	80	70	80	One record of 10 plants was missing from the data and has been added.
<i>Goodenia nuda</i>	NA	397	265	0	No longer a priority, removed.
<i>Rhynchosia bungarensis</i>	P4	1	1	1	No change.
<i>Hibiscus</i> sp. Mulga Downs	P1	1,426	1,803	1,426	This has since been ranked P1 and has been updated in the data. Some duplicate records have been removed and records with incorrect counts have been updated. There are 313 records from outside of the Mine and Borefield Survey Area (MBSA) which were not included in the report table, so the total records are 1739. Those records outside have been assigned OUT in the Site column of the attribute table.

## References

*ecologia* (2008). Murrays Hill (M47/206): Level 1 Vegetation and Flora Report. A report prepared for Hancock Prospecting Pty Ltd. December 2008).

Maia (2022). Strategen-JBS&G: Mulga Downs Iron Ore Project, Mine and Borefield Study Area Detailed Flora and Vegetation Assessment 2019-2022. A report prepared for Strategen-JBS&G.

Lyons, M. N. (2015). The riparian flora and plant communities of the Pilbara region of Western Australia. In: Records of the Western Australian Museum. Supplement 78: 485-513 (2015).

Please feel free to contact me if you require any further information in relation to the above.

Yours sincerely,  
Scot Hitchcock  
Principal Botanist

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PO Box 314 Leederville WA 6902

Ph: (08) 9317 8233

w: [www.spectrumecology.com.au](http://www.spectrumecology.com.au)

e: [info@spectrumecology.com.au](mailto:info@spectrumecology.com.au)