

The Vegetation and Plants on mining tenement ELA27521,  
Winchelsea Island

Supplementary report: Wet Season survey

April 2019

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## SUMMARY

This report provides the results of a wet season survey of the plants of mining tenement ELA27521, Winchelsea Island. It was conducted over 2 days (14-15 April 2019) after recognition that an earlier survey in November 2018 was deficient due to unfavourable seasonal conditions. The focus of this survey was on annuals and seasonally deciduous or seasonally dormant perennials, particularly those currently recognised as significant or threatened, or as introduced weeds. We also inspected the site of a proposed barge landing at the southern end of the island.

This survey added 64 species to the total obtained in November 2018; the November survey had therefore missed around 40% of the species due to adverse seasonal factors. With results from surveys prior to 2018, 52 of the 64 species were new records for the Island. One of them, the small kapok tree *Cochlospermum gregorii* was a new record for the greater Groote Eylandt archipelago.

Although collectively, a substantial number of additional species records was obtained from across ELA27521, the frequency of occurrence of herbaceous annuals was astonishingly low with this element of the flora being almost completely suppressed by shade from shrub layers and thick leaf litter.

No threatened plant species were found but one additional significant species, *Cyanthillium cinereum* var. *lanatum*, listed as NE (not evaluated) was recorded. However, this species is not endemic to the NT or geographically restricted to the Groote Eylandt region - it is widespread across the Top End. Therefore, of the 3 significant species now known from Winchelsea Island only *Sida* sp. Groote Eylandt is geographically restricted to it. On this survey *Sida* sp. Groote Eylandt proved to be widespread across the island with a possible affinity to areas where outcrops of manganese-bearing rocks occur.

Two additional introduced species were found. The tamarind tree, *Tamarindus indica* is abundant in the monsoon vine forests around the southern end of the tenement but is accepted as a common component of coastal fringe vegetation across the Top End, having been introduced prior to European settlement by Makassan seafarers. *Passiflora foetida*, stinking passionfruit can be an aggressive weedy vine. The only place it was seen was at the beach, under a casuarina tree used as a staging point by work groups and others coming to and from the island by boat. The potential for future weed introductions from Groote Eylandt is considered high. All industrial areas on Groote Eylandt have dense weedy perimeters which include, Snake Weed *Stachytarpheta jamaicensis*, Hyptis *Mesosphaerum suaveolens* and Mission Grass *Cenchrus pedicellatus*; and there is recent evidence that another significant weed, Grader Grass *Themeda quadrivalvis* is spreading from the community of Angurugu.

The vegetation on the rocky slopes above the proposed barge landing site (lat -13.77698, long 136.49574) is typical of vegetation class 9, *Eucalyptus tetradonta* open forest. *Sida* sp. Groote Eylandt was a common component in the shrub layer at the site. No weeds were seen at the site.

Overall, the flora of ELA27521 contains a range of plants that are widespread in Eucalypt woodland and open forest environments across the Top End. The most significant plant is *Sida* sp. Groote Eylandt which is relatively common across Winchelsea Island and could largely be restricted to it. While *Sida* sp. Groote Eylandt has also been collected from neighbouring Groote Eylandt the extent of its occurrence there has not been fully established. There is an urgent need for the taxonomic status of this species to be resolved and for its threat level to be properly assessed. Winchelsea

Island is essentially weed-free but this could easily change through the movement of people, and plant and equipment from weed contaminated industrial estates at Groote Eylandt.

#### METHODS FOR THE WET SEASON SURVEY

The earlier November survey used plot-based techniques at sites of proposed drill pads with other records obtained from along the routes of tracks to be cleared to access them. Most of the sites were accessed by bushwalking. This approach was not possible for the wet season survey. Seasonal growth of rampant vines, mostly *Amplelocissus acetosa* and *Smilax australis* rendered already thick shrubby understories almost impenetrable. However, in the months since the November survey, additional work to cut access paths across the interior of the island was completed which resulted in two navigable tracks through the middle of ELA27521; one running east-west and the other running north-south (Figure 1). These paths intersected all the main vegetation types so we used them as transects along which to search for:

- species not seen during the November survey with a particular focus on
- additional records of significant / threatened species and
- additional records of weedy species

Where the paths ran close to previously sampled drill pad sites these were revisited to record any plants not seen on the first visit.

In total there was around 13km of cleared pathways which we traversed over 2 days on April 14-15, 2019.

#### RESULTS

This wet season survey added 52 species to the list presented in Table 1 of the January 2019 report. One hundred and seventy species are now known from Winchelsea Island (updated Table 1 below). The earlier survey in November had therefore missed at least 40% of the species due to unfavourable seasonal conditions. Overall, only 9 species recorded from visits earlier than 2018 were not seen during our 2018/2019 surveys. However, many of these 9 species normally only occur in wetlands, a habitat we did not target as there was no wetland habitat at proposed drill pad sites or along the lines to be cleared to get to them. Of the new records for Winchelsea island, the kapok tree, *Cochlospermum gregorii*, seen at the rear of a beach to the east of the barge landing site, proved to be a new record for the greater Groote Eylandt archipelago. It is not a threatened species.

Although collectively, a substantial number of additional species records were obtained from across ELA27521, the frequency of occurrence of herbaceous annuals was astonishingly low with this element of the flora being almost completely suppressed by shading from dense shrub layers and a more-or-less continuous cover of thick leaf litter. The records of most of the annual herbs were from just one or two observations over the entire two-day survey. There were no annual grasses seen and only 5 species of perennial grass, which again were very sparsely distributed except for two spinifex grasses, *Triodia procera* and *Triodia microstachya* which became common on areas adjacent to sandstone around the northern periphery of ELA27521.

Table 1. Updated species list from ELA27521 with lifeform and IUCN threat status codes (TPWC Act 2014)

| Family           | Species                                      | Lifeform | IUCN threat status  | 2018-9 surveys | Previous surveys |
|------------------|--|----------|---------------------|----------------|------------------|
| ACANTHACEAE      | <i>Hypoestes floribunda</i>                  | fo       | lc (=least concern) | √              |                  |
| ACANTHACEAE      | <i>Pseuderanthemum variabile</i>             | fo       | lc                  | √              |                  |
| AMARANTHACEAE    | <i>Ptilotus conicus</i>                      | fo       | lc                  | √              |                  |
| AMARYLLIDACEAE   | <i>Crinum arenarium</i>                      | fo       | lc                  | √              |                  |
| ANACARDIACEAE    | <i>Buchanania obovata</i>                    | tr       | lc                  | √              | √                |
| ANNONACEAE       | <i>Uvaria glabra</i>                         | vn       | lc                  | √              | √                |
| APOCYNACEAE      | <i>Alyxia spicata</i>                        | vn       | lc                  | √              |                  |
| APOCYNACEAE      | <i>Carissa lanceolata</i>                    | sh       | lc                  | √              | √                |
| APOCYNACEAE      | <i>Cynanchum viminale subsp. brunonianum</i> | vn       | lc                  | √              |                  |
| APOCYNACEAE      | <i>Gymnanthera oblonga</i>                   | vn       | lc                  | √              | √                |
| APOCYNACEAE      | <i>Marsdenia trinervis</i>                   | sh.fo    | lc                  | √              |                  |
| APOCYNACEAE      | <i>Tabernaemontana orientalis</i>            | tr.sh    | lc                  | √              | √                |
| APOCYNACEAE      | <i>Tylophora cinerascens</i>                 | vn       | lc                  | √              |                  |
| APOCYNACEAE      | <i>Tylophora flexuosa</i>                    | vn       | lc                  | √              | √                |
| ARISTOLOCHIACEAE | <i>Aristolochia pubera</i>                   | fo       | lc                  | √              | √                |
| ASPARAGACEAE     | <i>Asparagus racemosus</i>                   | vn       | lc                  | √              |                  |
| ASTERACEAE       | <i>Cyanthillium cinereum var. lanatum</i>    | fo       | ne (=not evaluated) | √              |                  |
| BIXACEAE         | <i>Cochlospermum gregorii</i>                | tr       | lc                  | √              |                  |
| BORAGINACEAE     | <i>Trichodesma zeylanicum</i>                | fo       | lc                  | √              |                  |
| BURSERACEAE      | <i>Canarium australianum</i>                 | Tr       | lc                  | √              |                  |
| CAPPARACEAE      | <i>Capparis quiniflora</i>                   | vn       | lc                  | √              | √                |
| CELASTRACEAE     | <i>Denhamia cunninghamii</i>                 | tr       | lc                  | √              |                  |
| CELASTRACEAE     | <i>Denhamia obscura</i>                      | tr       | lc                  | √              | √                |
| CLEOMACEAE       | <i>Cleome viscosa</i>                        | fo       | lc                  | √              |                  |
| COMBRETACEAE     | <i>Terminalia canescens</i>                  | tr       | lc                  | √              |                  |
| COMBRETACEAE     | <i>Terminalia carpentariae</i>               | tr       | lc                  | √              | √                |
| COMBRETACEAE     | <i>Terminalia pterocarya</i>                 | tr       | lc                  | √              |                  |
| CONVOLVULACEAE   | <i>Bonamia pannosa</i>                       | fo       | lc                  | √              |                  |
| CONVOLVULACEAE   | <i>Xenostegia tridentata</i>                 | vn       | lc                  | √              |                  |
| CUPRESSACEAE     | <i>Callitris intratropica</i>                | tr       | lc                  | √              |                  |
| CYCADACEAE       | <i>Cycas arnhemica</i>                       | pm       | lc                  | √              | √                |
| CYPERACEAE       | <i>Bulbostylis barbata</i>                   | se       | lc                  | √              |                  |
| CYPERACEAE       | <i>Schoenus sparteus</i>                     | se       | lc                  | √              |                  |
| DILLENACEAE      | <i>Hibbertia lepidota</i>                    | sh       | lc                  | √              |                  |
| DILLENACEAE      | <i>Hibbertia oblongata subsp. oblongata</i>  | sh       | lc                  | √              |                  |
| DILLENACEAE      | <i>Hibbertia tomentosa</i>                   | sh       | lc                  | √              |                  |
| DIOSCOREACEAE    | <i>Dioscorea bulbifera</i>                   | vn       | lc                  | √              | √                |
| DIOSCOREACEAE    | <i>Dioscorea transversa</i>                  | vn       | lc                  | √              |                  |

|                 |  |       |             |   |   |
|-----------------|--|-------|-------------|---|---|
| DROSERACEAE     | <i>Drosera dilatato-petiolaris</i>                 | fo    | lc          | √ |   |
| EBENACEAE       | <i>Diospyros humilis</i>                           | tr.sh | lc          | √ | √ |
| EBENACEAE       | <i>Diospyros maritima</i>                          | tr    | lc          | √ |   |
| EBENACEAE       | <i>Diospyros rugosula</i>                          | tr.sh | lc          | √ |   |
| ELAEOCARPACEAE  | <i>Elaeocarpus arnhemicus</i>                      | tr    | lc          | √ |   |
| EUPHORBIACEAE   | <i>Croton habrophyllus</i>                         | tr    | lc          | √ |   |
| EUPHORBIACEAE   | <i>Euphorbia</i>                                   | fo    | lc          | √ |   |
| FABACEAE        | <i>Abrus precatorius subsp. precatorius</i>        | vn    | lc          | √ |   |
| FABACEAE        | <i>Acacia alleniana</i>                            | sh    | lc          | √ |   |
| FABACEAE        | <i>Acacia auriculiformis</i>                       | tr    | lc          | √ |   |
| FABACEAE        | <i>Acacia difficilis</i>                           | tr.sh | lc          | √ |   |
| FABACEAE        | <i>Acacia holosericea</i>                          | sh    | lc          | √ | √ |
| FABACEAE        | <i>Acacia lamprocarpa</i>                          | tr    | lc          | √ |   |
| FABACEAE        | <i>Acacia latescens</i>                            | tr    | lc          | √ | √ |
| FABACEAE        | <i>Acacia leptocarpa</i>                           | tr    | lc          |   | √ |
| FABACEAE        | <i>Acacia linarioides</i>                          | sh    | lc          | √ |   |
| FABACEAE        | <i>Acacia multisiliqua</i>                         | sh    | lc          | √ |   |
| FABACEAE        | <i>Acacia nuperrima</i>                            | sh    | lc          | √ |   |
| FABACEAE        | <i>Acacia oncinocarpa</i>                          | sh    | lc          | √ |   |
| FABACEAE        | <i>Acacia simsii</i>                               | sh    | lc          | √ | √ |
| FABACEAE        | <i>Acacia torulosa</i>                             | tr    | lc          | √ | √ |
| FABACEAE        | <i>Acacia umbellata</i>                            | sh    | lc          | √ |   |
| FABACEAE        | <i>Bossiaea bossiaeooides</i>                      | sh    | lc          | √ |   |
| FABACEAE        | <i>Chamaecrista nigricans</i>                      | sh.fo | lc          | √ |   |
| FABACEAE        | <i>Crotalaria medicaginea var. medicaginea</i>     | fo    | lc          | √ |   |
| FABACEAE        | <i>Crotalaria retusa</i>                           | fo    | lc          | √ |   |
| FABACEAE        | <i>Desmodium trichostachyum</i>                    | fo    | lc          |   | √ |
| FABACEAE        | <i>Erythrophleum chlorostachys</i>                 | Tr.sh | lc          | √ | √ |
| FABACEAE        | <i>Jacksonia dilatata</i>                          | sh    | lc          | √ |   |
| FABACEAE        | <i>Indigofera colutea</i>                          | fo    | lc          | √ | √ |
| FABACEAE        | <i>Indigofera hirsuta</i>                          | sh.fo | lc          | √ | √ |
| FABACEAE        | <i>Indigofera linifolia</i>                        | fo    | lc          | √ |   |
| FABACEAE        | <i>Rhynchosia minima</i>                           | vn    | lc          | √ |   |
| FABACEAE        | <i>Sophora tomentosa subsp. australis</i>          | tr.sh | lc          | √ | √ |
| FABACEAE        | <i>Tamarindus indica</i>                           | TR    | X (=exotic) | √ |   |
| FABACEAE        | <i>Tephrosia</i> (narrow leaflets)                 | sh    |             | √ |   |
| FABACEAE        | <i>Tephrosia juncea</i>                            | sh.fo | lc          | √ |   |
| FABACEAE        | <i>Tephrosia phaeosperma / sp. Pentecost River</i> | sh    | lc          | √ |   |
| FABACEAE        | <i>Tephrosia sp. Muddy Bay (P.I.Forster 15313)</i> | sh    | lc          | √ |   |
| FABACEAE        | <i>Tephrosia spechtii</i>                          | sh    | lc          | √ |   |
| FLAGELLARIACEAE | <i>Flagellaria indica var. australiensis</i>       | vn    | lc          | √ |   |
| LAMIACEAE       | <i>Clerodendrum tomentosum var. tomentosum</i>     | tr.sh | lc          | √ | √ |

|                |   |       |    |   |   |
|----------------|---|-------|----|---|---|
| LAMIACEAE      | <i>Vitex glabrata</i>   | tr    | lc | √ |   |
| LAURACEAE      | <i>Cassytha filiformis</i>                                    | vn    | lc | √ | √ |
| LAURACEAE      | <i>Litsea glutinosa</i>                                       | tr    | lc | √ |   |
| LECYTHIDACEAE  | <i>Planchonia careya</i>                                      | tr.sh | lc |   | √ |
| LOGANIACEAE    | <i>Strychnos lucida</i>                                       | tr    | lc | √ |   |
| MALVACEAE      | <i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i> | tr    | lc | √ |   |
| MALVACEAE      | <i>Brachychiton paradoxus</i>                                 | tr.sh | lc | √ |   |
| MALVACEAE      | <i>Corchorus aestuans</i>                                     | fo    | lc |   | √ |
| MALVACEAE      | <i>Corchorus sidoides</i> subsp. <i>rostrisepalus</i>         | sh    | lc | √ |   |
| MALVACEAE      | <i>Helicteres cana</i> subsp. <i>cana</i>                     | sh    | ne | √ |   |
| MALVACEAE      | <i>Hibiscus</i>   | sh    |    | √ |   |
| MALVACEAE      | <i>Hibiscus geranioides</i>                                   | fo    | lc | √ |   |
| MALVACEAE      | <i>Malvastrum americanum</i>                                  | fo    | X  |   | √ |
| MALVACEAE      | <i>Melhania oblongifolia</i>                                  | sh    | lc | √ |   |
| MALVACEAE      | <i>Sida</i> sp. Groote Eylandt                                | sh    | ne | √ | √ |
| MALVACEAE      | <i>Sterculia quadrifida</i>                                   | tr    | lc | √ |   |
| MALVACEAE      | <i>Triumfetta denticulata</i>                                 | sh.fo | lc | √ |   |
| MALVACEAE      | <i>Waltheria indica</i>                                       | sh.fo | lc | √ | √ |
| MELIACEAE      | <i>Aglaia brownii</i>   | tr    | lc | √ |   |
| MOLLUGINACEAE  | <i>Glinus oppositifolius</i>                                  | fo    | lc |   | √ |
| MORACEAE       | <i>Ficus henneana</i>   | TR    | lc | √ |   |
| MYRTACEAE      | <i>Asteromyrtus symphyocarpa</i>                              | tr.sh | lc |   | √ |
| MYRTACEAE      | <i>Calytrix brownii</i>                                       | sh    | lc | √ |   |
| MYRTACEAE      | <i>Corymbia ferruginea</i> subsp. <i>ferruginea</i>           | tr    | lc | √ |   |
| MYRTACEAE      | <i>Corymbia kombolgiensis</i>                                 | TR    | lc | √ |   |
| MYRTACEAE      | <i>Corymbia polycarpa</i>                                     | TR    | lc | √ | √ |
| MYRTACEAE      | <i>Eucalyptus jensenii</i>                                    | Tr    | lc | √ |   |
| MYRTACEAE      | <i>Eucalyptus tetradonta</i>                                  | TR    | lc | √ | √ |
| MYRTACEAE      | <i>Homalocalyx ericaeus</i>                                   | sh    | lc | √ |   |
| MYRTACEAE      | <i>Melaleuca cajuputi</i> subsp. <i>cajuputi</i>              | tr    | lc |   | √ |
| MYRTACEAE      | <i>Melaleuca ferruginea</i>                                   | tr    | lc | √ |   |
| MYRTACEAE      | <i>Melaleuca viridiflora</i>                                  | tr.sh | lc | √ | √ |
| MYRTACEAE      | <i>Syzygium suborbiculare</i>                                 | tr    | lc | √ |   |
| OPILACEAE      | <i>Opilia amentacea</i>                                       | vn    | lc | √ |   |
| ORCHIDACEAE    | <i>Dendrobium dicuphum</i>                                    | foe   | lc | √ |   |
| PANDANACEAE    | <i>Pandanus spiralis</i>                                      | pm    | lc | √ | √ |
| PASSIFLORACEAE | <i>Passiflora foetida</i>                                     | vn    | X  | √ |   |
| PHYLLANTHACEAE | <i>Antidesma ghesaembilla</i>                                 | tr.sh | lc | √ | √ |
| PHYLLANTHACEAE | <i>Breynia cernua</i>   | tr.sh | lc | √ |   |
| PHYLLANTHACEAE | <i>Bridelia tomentosa</i>                                     | tr.sh | lc | √ | √ |
| PHYLLANTHACEAE | <i>Flueggea virosa</i> subsp. <i>melanthesoides</i>           | sh    | lc | √ |   |
| PHYLLANTHACEAE | <i>Glochidion xerocarpum</i>                                  | tr    | lc | √ | √ |
| PHYLLANTHACEAE | <i>Phyllanthus exilis</i>                                     | fo    | lc | √ |   |
| PHYLLANTHACEAE | <i>Phyllanthus hebecarpus</i>                                 | fo    | lc | √ | √ |

|                 |   |       |    |   |   |
|-----------------|---|-------|----|---|---|
| PICRODENDRACEAE | <i>Petalostigma banksii</i>                       | tr    | lc |   | √ |
| PICRODENDRACEAE | <i>Petalostigma pubescens</i>                     | tr    | lc | √ | √ |
| PICRODENDRACEAE | <i>Petalostigma quadriloculare</i>                | sh    | lc | √ |   |
| POACEAE         | <i>Aristida holathera</i> var. <i>holathera</i>   | gr    | lc | √ |   |
| POACEAE         | <i>Cymbopogon procerus</i>                        | gr    | lc | √ |   |
| POACEAE         | <i>Eriachne avenacea</i>                          | gr    | lc | √ |   |
| POACEAE         | <i>Sorghum plumosum</i>                           | gr    | lc | √ |   |
| POACEAE         | <i>Triodia microstachya</i>                       | hgr   | lc | √ |   |
| POACEAE         | <i>Triodia procera</i>                            | hgr   | lc | √ |   |
| PORTULACACEAE   | <i>Portulaca bicolor</i>                          | fo    | lc | √ |   |
| PTERIDACEAE     | <i>Cheilanthes</i>                                | fn    | lc | √ |   |
| PROTEACEAE      | <i>Grevillea heliosperma</i>                      | tr    | lc | √ |   |
| PROTEACEAE      | <i>Grevillea pteridifolia</i>                     | tr    | lc | √ | √ |
| PROTEACEAE      | <i>Grevillea pungens</i>                          | sh    | lc | √ |   |
| PROTEACEAE      | <i>Hakea arborescens</i>                          | tr    | lc | √ | √ |
| PROTEACEAE      | <i>Persoonia falcata</i>                          | tr    | lc | √ | √ |
| PROTEACEAE      | <i>Stenocarpus acacioides</i>                     | tr.sh | lc | √ |   |
| PUTRANJIVACEAE  | <i>Drypetes deplanchei</i>                        | tr    | lc | √ | √ |
| RHAMNACEAE      | <i>Alphitonia excelsa</i>                         | tr    | lc | √ | √ |
| RUBIACEAE       | <i>Aidia racemosa</i>                             | Tr    | lc | √ |   |
| RUBIACEAE       | <i>Gardenia fucata</i>                            | tr    | lc | √ |   |
| RUBIACEAE       | <i>Ixora timorensis</i>                           | tr.sh | lc | √ |   |
| RUBIACEAE       | <i>Morinda citrifolia</i>                         | tr    | lc | √ |   |
| RUBIACEAE       | <i>Psydrax saligna</i> f. <i>filiformis</i>       | tr    | lc | √ |   |
| RUBIACEAE       | <i>Spermacoce elaiosoma</i>                       | fo    | lc | √ |   |
| RUBIACEAE       | <i>Spermacoce gilliesiae</i>                      | fo    | lc | √ |   |
| RUBIACEAE       | <i>Tabernaemontana orientalis</i>                 | tr    | lc | √ |   |
| RUTACEAE        | <i>Boronia lanuginosa</i>                         | sh    | lc | √ |   |
| RUTACEAE        | <i>Glycosmis trifoliata</i>                       | tr.sh | lc | √ |   |
| RUTACEAE        | <i>Harrisonia brownii</i>                         | sh    | lc | √ |   |
| RUTACEAE        | <i>Micromelum minutum</i>                         | tr    | lc | √ |   |
| RUTACEAE        | <i>Murraya paniculata</i>                         | tr    | lc | √ |   |
| SANTALACEAE     | <i>Exocarpos latifolius</i>                       | tr    | lc | √ | √ |
| SAPINDACEAE     | <i>Atalaya variifolia</i>                         | tr.sh | lc | √ |   |
| SAPINDACEAE     | <i>Cupaniopsis anacardioides</i>                  | tr    | lc | √ |   |
| SAPINDACEAE     | <i>Dodonaea hispidula</i> var. <i>hispidula</i>   | sh    | lc | √ | √ |
| SAPINDACEAE     | <i>Dodonaea lanceolata</i> var. <i>lanceolata</i> | sh    | lc | √ | √ |
| SAPINDACEAE     | <i>Ganophyllum falcatum</i>                       | Tr    | lc | √ |   |
| SAPOTACEAE      | <i>Mimusops elengi</i>                            | Tr    | lc | √ |   |
| SAPOTACEAE      | <i>Planchonella arnhemica</i>                     | tr    | lc | √ |   |
| SAPOTACEAE      | <i>Sersalisia sericea</i>                         | tr    | lc | √ |   |
| SMILACACEAE     | <i>Smilax australis</i>                           | vn    | lc | √ | √ |
| VIOLACEAE       | <i>Hybanthus enneaspermus</i>                     | fo    | lc | √ |   |
| VITACEAE        | <i>Ampelocissus acetosa</i>                       | vn    | lc | √ | √ |
| VITACEAE        | <i>Cayratia trifolia</i>                          | vn    | lc | √ |   |

|          |                          |    |    |   |  |
|----------|--------------------------|----|----|---|--|
| VITACEAE | <i>Cissus reniformis</i> | vn | lc | v |  |
|----------|--------------------------|----|----|---|--|

**Life form codes:** TR=large (canopy) tree, Tr=large (canopy) or small (mid-storey) tree, tr= small tree, sh=shrub, pm=palm, vn=vine, fo=forb (herbaceous plant not a grass or sedge), foe=epiphytic forb, fn=fern, se=sedge, gr=tussock grass, hgr=hummock grass, v = species recorded in wet season survey of Apr 2019, but not in Nov 2018.

### *Threatened / significant species*

In addition to *Helicteres cana subsp. cana* and *Sida sp.* Groote Eylandt, recorded in the November 2018 survey, another 'not evaluated' species, the annual daisy, *Cyanthillium cinereum var. lanatum*, was recorded at two locations during this survey. However, from Table 4 (Jan 2019 report) it was not identified as either endemic to the NT or strongly restricted to the Groote region and therefore is not considered to be of particular importance. In contrast the range-restricted *Sida sp.* Groote Eylandt proved to be much more widespread than was evident in November when most plants were leafless. Seventeen new records were obtained from this survey (Figure 1), many associated with areas having surface expressions of manganese-bearing rock.

### *Exotic species*

Two additional introduced species were found during this survey. The tamarind tree, *Tamarindus indica* is abundant in the monsoon vine forests around the southern end of the tenement but is accepted as a common component of coastal fringe vegetation across the Top End, having been introduced prior to European settlement by Makassan seafarers.

*Passiflora foetida*, stinking passionfruit can be an aggressive weedy vine. The only place it was seen was at the beach, under a shady casuarina tree used as an assembly point by work groups and others coming to and from the island by boat. Once established it is commonly spread by birds, particularly parrots (pers. obs.).

The potential for future weed incursions from Groote Eylandt to Winchelsea Island is considered high. All industrial areas around Alyangula on Groote Eylandt have dense weedy perimeters which include, Snake Weed *Stachytarpheta jamaicensis*, Hyptis *Mesosphaerum suaveolens* and Mission Grass *Cenchrus pedicellatus*. Another significant weed on Groote Eylandt is Grader Grass *Themeda quadrivalvis*, currently established at, and largely confined to the community of Angurugu south of Alyangula, but now showing signs of spread along some bush tracks.

### *Proposed barge landing site (lat -13.77698, long 136.49574)*

The vegetation on the rocky slopes above the beach at the site of the proposed barge landing is woodland / open forest with *Eucalyptus tetradonta* forming the canopy; a sparse mid-storey mostly of *Acacia latescens* and a dense shrubby understorey including *Dodonaea hispidula var. hispidula*, *Alphitonia excelsa*, *Acacia torulosa*, *Carissa lanceolata* and *Sida sp.* Groote Eylandt, with a range of

shrubby forms of vine thicket species such as *Dryptetes deplanchei*, *Glochidion xerocarpum* and *Tabernaemontana orientalis*. It is typical of vegetation class 9, *Eucalyptus tetrodonta* open forest. *Sida sp.* Groote Eylandt was a common component in the shrub layer at the site. No weeds were seen at the site.

## CONCLUSION

The flora of ELA27521 includes at least 170 species. There are probably more, but any additional species would most likely be annuals which were not detected during our survey due to their very low frequency of occurrence under conditions of shading from shrubs and thick leaf litter. Overall, the range of plants across ELA27521 are species that are widespread in Eucalypt woodland and open forest environments across the Top End with the exception of *Sida sp.* Groote Eylandt which is relatively common across Winchelsea Island and could be largely restricted to it. While *Sida sp.* Groote Eylandt has also been collected from neighbouring Groote Eylandt the extent of its occurrence there has not been fully established. There is an urgent need for the taxonomic status of this species to be resolved and for its threat level to be properly assessed. In the first instance Robyn Barker from the State Herbarium of South Australia, an Australian authority on *Sida*, is best placed to deal with the taxonomic component. Staff at the Herbarium of the Northern Territory could undertake any subsequent assessments to assign an IUCN threat code.

At present Winchelsea Island is essentially weed-free but this could easily change through the movement of people, and plant and equipment from weed-contaminated industrial estates at Groote Eylandt.