



SAVING OUR SPECIES

Hibbertia sp. Bankstown

2020-2021 annual report card

Overall status*



Populations at all sites are known to be on track.



Threat management is known to be on track at all sites, and population status is unknown at one or more sites.



Threat management is known to be off track at one or more sites, and population status is unknown at one or more sites.



Populations at one or more sites are known to be off track.

* For SoS priority management sites (may not include all locations where the species occurs in NSW)



Scientific name:

Hibbertia sp. Bankstown

NSW status:

Critically Endangered

Commonwealth status:

Critically Endangered

Management stream:

Site-managed species

Summary

Management sites	Bankstown Airport; Bill Anderson Reserve; East Hills Footbridge Reserve; East Hills Reserve; Riverside Park Reserve; Voyager Point Reserve
Action implementation	8 (of 8) management actions were fully or partially implemented as planned for the financial year.
Total expenditure	\$148,282 (\$80,682 cash; \$67,600 in-kind)
Partners	Australian Government Bushfire Recovery Program; Bankstown Airport Limited; Canterbury-Bankstown Council; Environment, Energy and Science; Greater Sydney Local Land Services; Liverpool City Council

Photo: Gavin Phillips





Priority management site: Bankstown Airport

Local government area:
Canterbury-Bankstown

Partners:

Australian Government Bushfire Recovery Program; Bankstown Airport Limited; Environment, Energy and Science; Greater Sydney Local Land Services; Liverpool City Council

Population outcome

-  **On track**
-  **On track (inferred)**
-  **Not on track (inferred)**
-  **Not on track**

Monitoring

Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Monitoring metric	Species abundance
Annual target	Maintain or increase plant numbers to more than 700 individuals.
Long term target	Species population numbers at the site are stable or increasing from the current baseline number of 100 individuals over the project period.
Monitoring result	845 plants were recorded, tagged and measured across the 4 sub-populations, of which 396 were adult and 449 juvenile.
Scientific rigour of monitoring method	High
Conducted by	Bankstown Airport Limited; Environment, Energy and Science

Investment

Participant	Cash	In-kind
Australian Government Bushfire Recovery Program	\$14,920	\$0
Bankstown Airport Limited	\$0	\$5,300
Environment, Energy and Science	\$55,762	\$8,000
Greater Sydney Local Land Services	\$0	\$1,600

Management actions

The following actions are those identified as being required in financial year 2020-2021 to secure the species in the wild.

Threat	Management action	Implemented as planned?
Airport grounds maintenance and modification, including mowing or slashing.	Site management must be undertaken as per the endorsed plan of management, to avoid any damage or death to the plants.	Yes
Competition and changes to soil and microclimate associated with invasive weeds.	Undertake hand-weeding within the 4 key habitat areas to remove exotic grass cover and non-natives, and use brush-cutting outside to remove thick cover of weeds and prevent setting of weed seeds in the soil bank.	Yes
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Establish additional insurance <i>in-situ</i> populations and increase the size of the existing translocated populations - to reduce the risk of species extinction.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Airport grounds maintenance and modification, including mowing or slashing.	Damage limited to less than 15 plants.	On track
Competition and changes to soil and microclimate associated with invasive weeds.	Reduce weed cover to under 30%.	On track
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Increase insurance population numbers and size to reduce the risk of species extinction.	On track

Site summary

The site shows significant recovery in terms of reduced weed cover, improved habitat conditions, increased population size and plant numbers with mixed age classes. Plant numbers have increased substantially from 545 in 2019 to 845, with a cumulative eight folds increase. In comparison, less than 100 individuals were found in 2016. These results indicate that active management has been effective in deterring threats and supporting the growth and survival of plants.

Off the 845 plants found, 396 were adults and 449 were juvenile. About 84.5% of plants were healthy, with only 20 plants found dead, damaged or in poor health, and no notable differences observed between sub-populations. Size of plants varied considerably within the populations, ranging for 50 - 1657 mm. Plants from sub-population 4 were, on average, significantly larger than the other 3 sub-populations. Forty percent of the total population were reproductive, representing 93% of all plants recorded as adults.

The median number of fruits produced by plants was <10, however there was a significant correlation between plant size and fruit production, indicating a size related reproduction threshold with larger plants significantly more likely to bear fruit. Sub-population 4 produced the greatest number of fruit (consistent with having the highest number of larger plants), followed by sub-population 1. The viability of fruit, that is presence and number of filled seeds, is unknown.





On-going active management has resulted in reduced weed cover across four sub-populations. African lovegrass was the major weed that was targeted along with other invasive weeds like: whisky grass, Chilean quaking grass; flaxleaf fleabane, flatweed; *Paspalum*; lamb's tongues; field madder; and fireweed. However, more needs to be done as weeds are considered a persistent problem requiring long-term commitment to control, and the recovery of natural systems is generally a slow process.

Priority management site: Bill Anderson Reserve

Local government area:
Liverpool

Partners:
Australian Government Bushfire Recovery Program;
Environment, Energy and Science; Liverpool City Council

Population outcome

-  On track
-  **On track (inferred)**
-  Not on track (inferred)
-  Not on track

The species population is inferred to be on track based on threat management being on track. The population trend is unknown at this time.

Monitoring

Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Baseline monitoring conducted.

Monitoring metric	Species abundance
Monitoring result	Of the 120 plants planted within two experimental plots (12 m x 6 m) , 65 plants (54%) have survived and are establishing well.
Scientific rigour of monitoring method	High
Conducted by	Environment, Energy and Science

Investment

Participant	Cash	In-kind
Australian Government Bushfire Recovery Program	\$3,350	\$0
Environment, Energy and Science	\$0	\$2,000
Liverpool City Council	\$0	\$700

Management actions

The following actions are those identified as being required in financial year 2020-2021 to secure the species in the wild.

Threat	Management action	Implemented as planned?
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Partially supplement the existing translocated population with additional plants to establish a viable population, and to maintain genetic diversity and enhance species resilience.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Increase population size to enhance population viability.	On track

Site summary

After-planting care of a translocated population of 120 plants (including regular watering) continue following planting last year. Monitoring data is captured using a standard field pro-forma to establish sufficient baseline data and to compare and identify trends in species survival, growth and reproduction. Mixed results are achieved with a plant survival rate of 54% which is bit above the normal threshold (>50%). Plants in open area are generally doing well in comparison to the those planted in shaded area, indicating a species preference of sunlight to grow and establish. The reason for plant deaths could be due to hot, dry condition in summer with constrained soil moisture level and frost damage in winter.





Plant survival rate is encouraging, considering the survival rate in a translocation is highly unpredictable. Several complex environmental factors and interacting processes, some of which are random or chaotic, may affect the successful establishment of a population, regardless of using sound translocation methods and standard techniques; exceptional experimental design and careful monitoring. Knowledge gathered here will be considered and adapted to achieve better results with establishment of translocated populations elsewhere.

Priority management site: East Hills Footbridge Reserve

Local government area:
Liverpool

Partners:
Australian Government Bushfire Recovery Program;
Environment, Energy and Science; Liverpool City Council

Population outcome

-  On track
-  **On track (inferred)**
-  Not on track (inferred)
-  Not on track

The species population is inferred to be on track based on threat management being on track. The population trend is unknown at this time.

Monitoring

Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Baseline monitoring conducted.

Monitoring metric	Species abundance
Monitoring result	Of the 60 plants planted within two experimental plots (12 m x 6 m), 27 plants (45%) have survived and are establishing well.
Scientific rigour of monitoring method	High
Conducted by	Environment, Energy and Science

Investment

Participant	Cash	In-kind
Australian Government Bushfire Recovery Program	\$3,350	\$0
Environment, Energy and Science	\$0	\$2,000
Liverpool City Council	\$0	\$700

Management actions

The following actions are those identified as being required in financial year 2020-2021 to secure the species in the wild.

Threat	Management action	Implemented as planned?
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Partially supplement the existing translocated population with additional plants to establish a viable population and to maintain genetic diversity and enhance species resilience.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Increase population size to enhance population viability.	On track

Site summary

After-planting care of a translocated population of 60 plants (including regular watering) continue following planting last year. Monitoring data is captured using a standard field pro-forma to establish sufficient baseline data and to compare and identify trends in species survival, growth and reproduction. Mixed results were achieved with a plant survival rate of 45% which is a generally less than expected (>50%). Plants in open area are generally doing well in comparison to those planted in shaded area, indicating a species preference for sunlight to grow and establish. The reason for plant deaths could be due to hot, dry condition in summer with constrained soil moisture level and frost damage in winter.





Although plant survival rate is less than expected, but it's encouraging, considering the survival rate in a translocation is highly unpredictable. Several complex environmental factors and interacting processes, some of which are random or chaotic, may affect the successful establishment of a population, regardless of using sound translocation methods and standard techniques; exceptional experimental design and careful monitoring. Knowledge gained here will be considered and adapted to achieve better results with establishment of translocated populations elsewhere.

Priority management site: East Hills Reserve

Local government area:
Canterbury-Bankstown

Partners:
Canterbury-Bankstown Council;
Environment, Energy and
Science

Population outcome

-  On track
-  **On track (inferred)**
-  Not on track (inferred)
-  Not on track

The species population is inferred to be on track based on threat management being on track. The population trend is unknown at this time.

Monitoring

Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Baseline monitoring conducted.

Monitoring metric	Species abundance
Monitoring result	Of the 60 plants planted within two experimental plots (6 m x 5 m), 44 plants (73%) have survived and are establishing well.
Scientific rigour of monitoring method	High
Conducted by	Environment, Energy and Science

Investment

Participant	Cash	In-kind
Canterbury-Bankstown Council	\$0	\$23,400
Environment, Energy and Science	\$0	\$21,200

Management actions

The following actions are those identified as being required in financial year 2020-2021 to secure the species in the wild.

Threat	Management action	Implemented as planned?
Competition and changes to soil and microclimate associated with invasive weeds.	Partial supplementation of the existing translocated population was undertaken with additional plants, due to logistic reasons compounded with COVID-19 public health restrictions.	Yes
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Supplement the existing population with additional planting to increase the population size and enhance population viability.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Maintain the population size by maximizing the plants survival rate.	Baseline data collection
Competition and changes to soil and microclimate associated with invasive weeds.	Reduce or minimise weed cover to <5% in proximity to the population.	On track

Site summary

After-planting care of a translocated population of 60 plants (including regular watering) continue following planting last year. Monitoring data is captured using a standard field pro-forma to establish sufficient baseline data and to compare and identify trends in species survival, growth and reproduction. Monitoring results show about 73% plants of the plants have survived and established well with flowers and seeds during the spring time. Ex-situ propagated plants from seeds are generally showing more resilience to adapt and survive in the new environment compared to vegetative propagated plants. Similarly, as seen in other sites, plants in open area are doing well in comparison to the those planted in shaded area, indicating a species preference for sunlight to grow and establish. Mortality of some plants seen could be due to hot, dry condition in summer with constrained soil moisture level and frost damage in winter.





Seedling recruitment is not seen in the matured population yet, perhaps due to lack of germination cues like fire that is required to stimulate recruitment from soil seed bank. Alternative options like cool burn trials to promote species regeneration from soil seed bank will be considered in the future.

Priority management site: Riverside Park Reserve

Local government area:
Liverpool

Partners:
Australian Government Bushfire Recovery Program; Environment, Energy and Science; Liverpool City Council

Population outcome

-  On track
-  **On track (inferred)**
-  Not on track (inferred)
-  Not on track

The species population is inferred to be on track based on threat management being on track. The population trend is unknown at this time.

Monitoring

Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Baseline monitoring conducted.

Monitoring metric	Species abundance
Monitoring result	Of the 120 plants planted within two experimental plots (12 m x 6 m), 49 plants (41%) have survived and are establishing well. Plants in open area are generally doing well in comparison to the those in shaded area, implying species preference to more sunlight.
Scientific rigour of monitoring method	High
Conducted by	Environment, Energy and Science

Investment

Participant	Cash	In-kind
Australian Government Bushfire Recovery Program	\$3,300	\$0
Environment, Energy and Science	\$0	\$2,000
Liverpool City Council	\$0	\$700

Management actions

The following actions are those identified as being required in financial year 2020-2021 to secure the species in the wild.

Threat	Management action	Implemented as planned?
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Partially supplement the existing translocated population with additional plants to establish a viable population, and to maintain genetic diversity and enhance species resilience.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Increase population size to enhance population viability.	On track

Site summary

After-planting care of a translocated population of 120 plants (including regular watering) continue following planting last year. Monitoring data is captured using a standard field pro-forma to establish sufficient baseline data and to compare and identify trends in species survival, growth and reproduction. Mixed results are achieved with a plant survival rate of 41% which is generally less than expected (>50%). Plants in open area are generally doing well in comparison to the those planted in shaded area, indicating a species preference for sunlight to grow and establish. The reason for plant deaths could be due to hot, dry condition in summer with constrained soil moisture level and frost damage in winter.

Although plant survival rate is less than expected, it's encouraging considering the survival rate in a translocation is highly unpredictable. Several complex environmental factors and interacting processes, some of which are random or chaotic, may affect the successful establishment of a population, regardless of using sound translocation methods and standard techniques; exceptional experimental design and careful monitoring. Knowledge gathered here will be considered and adapted to achieve better results with establishment of translocated populations elsewhere.

Priority management site: Voyager Point Reserve

<p>Local government area: Canterbury-Bankstown; Liverpool</p> <p>Partners: Environment, Energy and Science</p>	<p>Population outcome</p> <ul style="list-style-type: none"> ● On track ● On track (inferred) ● Not on track (inferred) ● Not on track <p>The species population is inferred to be on track based on threat management being on track. The population trend is unknown at this time.</p>
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Monitoring

Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Species population monitoring was not conducted at this site this financial year - The site was impacted by a prolonged drought followed by 2019-20 bushfire that destroyed a successfully established translocated population of 240 plants.

Management actions

No management actions were planned at this site for the financial year.

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
The species is susceptible to extinction via stochastic processes due to its small known population size and restricted distribution.	Maintain or reduce level of threat.	Not assessed
Competition and changes to soil and microclimate associated with invasive weeds.	Reduce or eliminate weeds to <5% in proximity to the population.	Not assessed

Site summary

The 2019—20 bushfires completely destroyed a successfully established population of 240 plants. Regeneration of this species is highly unlikely; given the extent, timing and method of regeneration are not fully understood nor totally predictable. The bushfire destruction has provided an opportunity to undertake species seed ecological experiments including burying the seeds directly into a homogenised post-fire landscape (ash-bed) which is known to promote germination. This experiment aims to investigate whether this critically endangered species can successfully be translocated and established by direct seeding. More specifically, this experiment will also determine if seed age and a smoke-water pre-treatment influences the success rate. Further planting may be considered in future if there is no recruitment from the soil seed bank.

Saving our Species 2020-2021 annual report card for *Hibbertia* sp. Bankstown. For more information refer to the specific strategy in the Saving our Species program.