Kimberley Rangelands Biosecurity Association Invasive Species Activity Report 2022/23

Large Feral Herbivores

Overview: The Kimberley Rangelands Biosecurity Association (KRBA) has an annual Large Feral Herbivore (LFH) culling program that includes feral donkeys, horses and camels with other animals such as water buffalo and pigs targeted opportunistically when located. The program focusses primarily on donkeys, using the Judas program's radio telemetry techniques with horses and camels culled opportunistically during the tracking process. Currently there are approximately 45 active collars throughout the Kimberley region including three satellite collars utilised for research purposes.

Occasionally and as required dedicated management culls are enacted for feral horses and camels. An example of this is an annual cull of feral horses in the East Kimberley focusing on the Great Northern Highway and adjacent pastoral leases. The cull's primary role is dual in nature, firstly to reduce the impact of the horses on pastoral land and secondly to reduce the risk of traffic accidents and the subsequent potential injury to road users as a result of horses gravitating to water points and better grazing opportunities immediately adjacent the highway.

Achievements as per operational plan: All programs in the 2022-23 year had to be suspended due Department of Primary Industries and Regional Development (DPIRD) Biosecurity Officers having their authority to shoot suspended due to an internal dispute between the operational and compliance sections of DPIRD. Unfortunately, the matter had a number of timeframes in which a resouloution was expected but in every case the resolution date was pushed back and still had not been satisfactorily resolved by the end of the financial year.
Additional issues complicated the matter, they include –

- National best practices for the culling of LHF recommend the use of semiautomatic firearms for cull purposes. In Western Australia only Government shooters are authorised to use that category of firearms with private contractors unable to gain authorisation.
- The Code of Practice for the Capture and Marketing of Feral Animals in Western Australia has been reviewed to enable alternative firearms to be sanctioned for use the culls in some instances. However, the document is still in draft form, only recently has DPIRD provided advice to the KRBA that the draft could be used as the basis for private contractors to carry out LFH culls.
- Currently the drug used in the collaring process of Judas Donkeys can only be used by authorised Government Biosecurity officers. Private contractors would need to apply for authorisation to use that drug.

Analysis: A cost benefit analysis was undertaken of the Judas Program by the KRBA in 2019 to assist in determining the direction of the program over the next 30 years. It was found that the program to date had generated a Benefit Cost Ratio (BCR) of 3.8 for every dollar spent on the program. It should be noted that the ratio was for the Judas Program, any management cull that controlled comparatively large numbers of animals in a relatively short period of time would be expected to generate a much better BCR. Specific example of this is the 2021-22 year where donkey culls numbers represented only 26% of total number of horses culled but in a time span of 7.5 times longer.

On that basis it could be reasonably expected that if the full $155,000 in was spent in 2022-23 there would have been a $589,000 benefit to the pastoral industry on top of the expected benefits to the numerous high value public environmental assets such as National Parks, Nationally Important Wetlands, Ramsar Sites and recognised Wild Rivers situated in the Kimberley that the cost benefit

analysis was unable to take into account in its calculations.

Performance indicators: In 2018 DPIRD carried out an evaluation of the Judas feral donkey management program in the Kimberley and Pilbara regions of Western Australia 1994 – 2017. Data from that evaluation has been utilised in addressing some of the following indicators.

Reduction in feral donkey populations: Whilst we have good data on the numbers of LFH animals culled we still are unable to confirm populations at the start of the program and the present day. However, using the cull data (see Figure 1) it has been estimated that when the program began in 1978 there were an estimated 250,000 animals in the Kimberley region and the current population is estimated at between 3,000 and 5,000 animals.

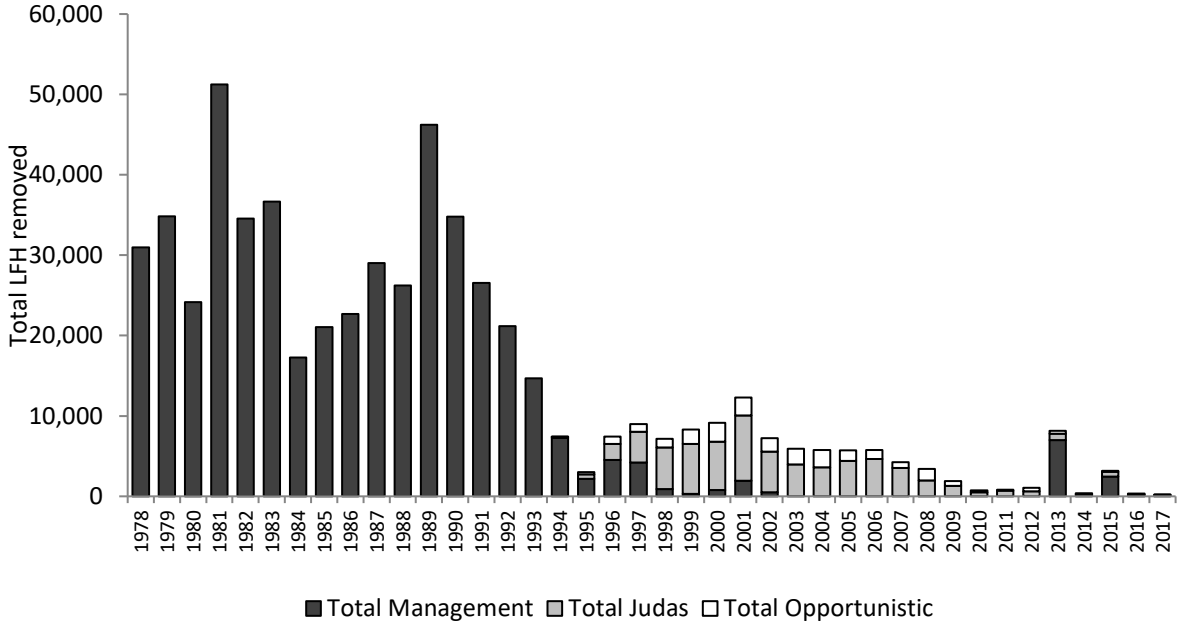


Figure 1: Annual removal of LFH in the Kimberley during the management program (1978 – 2017); black bars – management shoots; light grey bars – Judas program, and white bars – opportunistic shoots associated with the Judas program.

Number of properties locally eradicated: In 2017 in was believed that nearly 75% (n = 58) of all properties participating in the Judas program have reached the stage of being considered eradicated. It took on average 9.2 (± 4.5) years to achieve local eradication (see Table 2, Figure 2A). On that basis 25% (n = 19) properties are considered to be under the Judas control program. Some are nearly eradicated and some are under a monitoring phase to confirm localized eradication (see Table 2 and Figure 2B).

The number of donkeys controlled diminished considerably, which indicates that the Judas program has been highly successful. The relative cost per donkey controlled now is considerably higher than during the initial phases of the Management shoots and the beginning of the Judas program.

Shire	Properties participating in Judas program n	Properties considered eradicated n (%)	Properties considered to be under control (nearly eradicated) n (%)
West Kimberley	32	23 (72%)	9 (28%)
Halls Creek	23	21 (91%)	2 (9%)
East Kimberley	22	14 (64%)	8 (36%)

Total	77	58 (75%)	19 (25%)

Table 2: Number of properties that participated in the Judas program, properties that have been considered eradicated, and properties that remain under the control program

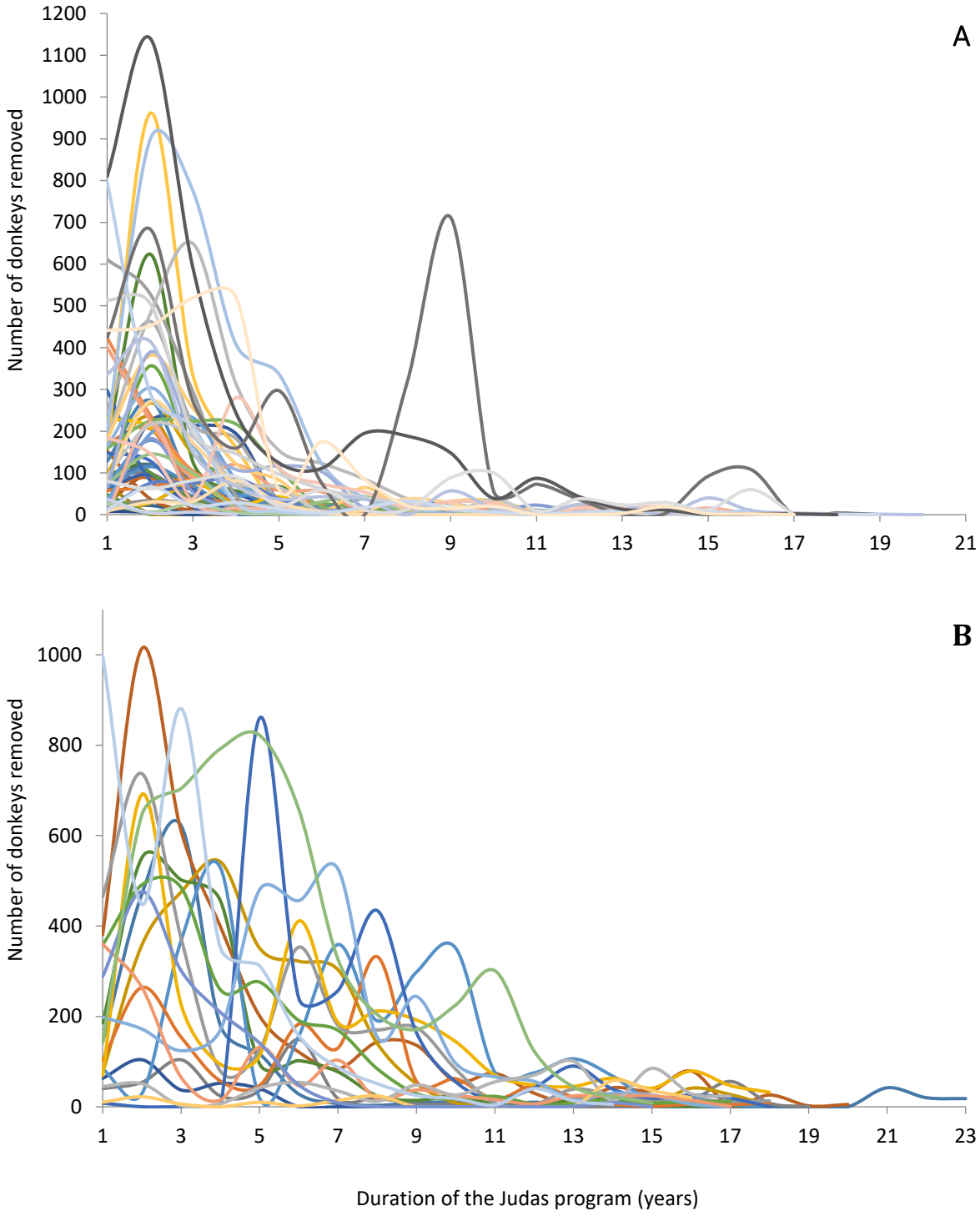


Figure 2 A, B: Properties (n = 58) that are considered eradicated, and properties (n = 19) which are under control with low donkey numbers; each line represents one pastoral property

Reduction in feral camel and horse populations: There is not the data at this stage to indicate the full extent of culls on both the camel and horse populations in the Kimberley as their culling programs are less intensive than the donkey program. However anecdotal evidence from land managers indicates that these culls have been extremely effective at a local level.

Recommendations: Maintain LFH program as per 2023-24 Operational Plan utilising to some extent private contractors and DPIRD when staff become available.

Wild Dogs

Overview: The KRBA runs two aerial baiting programs a year to support the individual ground baiting programs run by pastoral stations. They are usually programmed for April and September to avoid rains that will render the baits useless. The programs are coordinated by a contractor. In addition to the baiting service the contractor also provides according to the demand bait injection courses for pastoralists as part of the baiting service provided by the KRBA.

Achievements as per operational plan: The September 2022 program covered 32 leases. Six stations cancelled on this run and there were no new stations coming on board that had not participated previously. This resulted in the following bait quantities dropped or supplied to pastoralists –

- 45,000 baits were injected by the contractor.
- 8,900 pre-made field prepared dried meat baits were supplied to stations by the contractor.
- 5 Litres of 1080 CLC were supplied to pastoralists to inject their own baits.
- Average time baits sat on the racks after injecting was 3.5 days.
- 25% of respondents replied to the initial yes/no enquiry (about average).
- Bait quality (rated out of 10) ranged between 6 and 10 with only one station below 8.

The May 2023 program covered 36 leases. Three stations cancelled on this run and two new stations come on board that had not participated previously. This resulted in the following bait quantities dropped or supplied to pastoralists –

- 85,600 baits were injected by the contractor.
- 3,000 pre made baits were supplied to stations.
- 3 litres of 1080 concentrate was supplied to pastoralists to inject their own baits.
- Average time baits sat on the racks after injecting was 3.2 days.
- 10% of respondents replied to the initial yes/no enquiry (about average).
- Bait quality (rated out of 10) ranged between 6 and 10 with three stations below 8.

Analysis: A cost benefit analysis was undertaken for DPIRD'S WA Wild Dog Action Plan 2016 – 21. It estimated that dog control in the Kimberley had a Benefit Cost Ratio of 5.1. On that basis it could be reasonably expected that the $213,000,00 funds spent of wild dog control in the 2022-23 year gave a benefit to industry of $1,065,000.

In 2021 Murdoch University, Western Australia carried out a year-long study on the diet of dingoes in the West Kimberley. In scat samples cattle were detected in 65.3% of those samples. Compared with the national average diet of cattle being present in 13% of samples for the arid and tropical regions of Australia, the consumption of cattle (live cattle and carrion) in the West Kimberley is very high, with greater consumption in the control and treatment sites at the end of the dry season compared to the early dry season the researchers noted. The concern from land managers is that if dingo numbers are not managed adequately there is huge potential for increased calf predation at the end of the dry season.

Performance indicator: No data is available to verify what calf survival rates are due to the program at a regional level however in the 2022 membership survey carried out by the KRBA it was identified that the twenty one managers who regularly used the plane as part of their baiting program generally rated the threat of wild dogs lower than those who didn't and the twenty managers that rated the aerial baiting program service gave it an average score of 9.25/10, much the same as the 2019 rating of 9.2/10. Both these observations indicate that the satisfaction level with the program is extremely high.

Recommendations: Maintain wild dog program as per 2023-24 Operational Plan.

Pigs

No work was undertaken on pigs this year.

Recommendations: Initiate a pilot control program in two locations within the Kimberley region once a suitable contractor can be found.

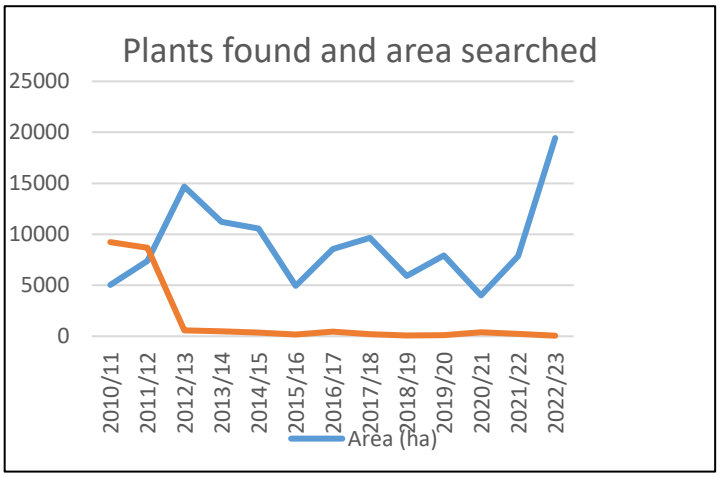
Prickly Acacia

Overview: Prickly acacia is known to exist in two locations in Western Australia, both in the East Kimberley region. The KRBA runs the control program on the Nulla Nulla site and monitors the Gordon Downs site where control has been undertaken by the land manager. The Nulla Nulla site covers 10,578 hectares and work has been ongoing on that site since approximately 2004. The KRBA has supported this work in terms of funding since the onset and took control of the operational aspects of the program in 2017.

The Gordon Downs site was first identified by a DPIRD Biosecurity Officer in 2012 when a small number of juvenile plants were found. A number of monitoring runs have been undertaken since that time with no further plants found.

Achievements as per operational plan: Two control runs were carried out on the Nulla Nulla site over the 2022/23 year. In total 54 plants were controlled over a 19,438ha area. For reference, at the start of the program in November of 2010 9,230 plants were controlled in that year (see Graph 1).

No survey work was carried out on the Gordon Downs site.



Graph 1

Analysis: No benefit cost analysis has been carried out on impact of Prickly Acacia on this site however the economic impacts of Prickly Acacia on QLD's grazing industry was estimated at $5 million per year (2003). Even at medium densities, it halves productivity of grasslands, interferes with mustering and restricts access to water. This comes on top of the expected ecological benefits the removal of this weed from the Landscape would provide to the numerous high value public environmental assets such as National Parks, Nationally Important Wetlands, Ramsar Sites and recognised Wild Rivers situated in the Kimberley.

Performance indicator: The performance indicator will be the eventual eradication of prickly acacia from the Kimberley region. This work is ongoing and confidence is reasonably high that the target is achievable given the results to date.

Recommendations: Maintain eradication program as per 2023-24 Operational Plan.

Mesquite

Overview: Mesquite is known to exist in three locations in the Kimberley region of Western Australia. The KRBA ran a control program over the Nicholson site until 2020 when it was handed over the lease owner Heytesbury Cattle Company after eight years of work had reduced the infestation down to a manageable size. At that same time the KRBA took on the operational work from DPIRD of the Yeeda and Thangoo infestations as well as previously providing financial support to those programs.

Achievements as per operational plan: In July 2022 the following field work was undertaken –

- 627ha was surveyed on the Yeeda site with 56 plants controlled.
- 815ha was surveyed on the Alexander Island site on Jubilee Downs with 6 plants controlled.
- 2,900ha was surveyed on Thangoo with 56 plants controlled.
- A survey was undertaken to see if there is any connectivity between the Alexander Island and Yeeda sites. No evidence was found but new rubber vine sites were located upstream of the existing Yeeda rubber vine program area.

In April 2023 4,757ha was surveyed on the Yeeda site with 43 plants controlled.

Analysis: No benefit cost analysis has been carried out on impact of mesquite on these sites however it is well known that the Pilbara mesquite infestation covers in excess of 55,000ha and creates a significant cost to production and for control annually. This comes on top of the expected ecological benefits the removal of this weed from the Landscape would provide to the numerous high value public environmental assets such as National Parks, Nationally Important Wetlands, Ramsar Sites and recognised Wild Rivers situated in the Kimberley.

Performance indicator: The performance indicator will be the eventual eradication of mesquite from the Kimberley region. This work is ongoing and confidence is reasonably high that at least in some locations the target is achievable high given the results to date.

Recommendations: Maintain eradication program as per 2023-24 Operational Plan.

Rubber vine (Cryptostegia grandiflora)

Background: Rubber vine control in the Kimberley has been supported by the KRBA since 2009. There are two distinct programs, one in the East and the other in the West Kimberley managed by a partnership group made by of the following organisations –

- KRBA
- DPIRD
- DBCA

Both programs did run independently of the other with separate steering groups overseeing the planning and work carried out until 2023 where both groups were merged to form a single management and operational group (Western Australian Rubber Vine Advisory Group – WARVAC). Ground work is largely undertaken by contractors but partner organisations also provide in-kind as well as financial support. Coordination of the programs is provided to the group by DPIRD on a fee for service basis.

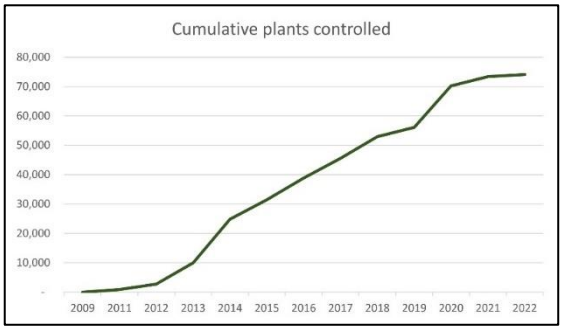
The KRBA provides both funding and in-kind support to both programs. In 2020 the KRBA agreed to take on the role of sponsor organisation for both group's SNRM funding applications and to provide financial management to the programs. Other partner organisations also provide funding and in-kind contributions such as personnel to carry out the control and survey work.

Achievements as per operational plan: - East Kimberley: Work was carried out on the East Kimberley site but the full data set is currently not available due to DPIRD's new data collection process using the Field Maps collection program. More work is been organised to complete this year's program.

Achievements as per operational plan: - West Kimberley: Work was initiated on the new sites upstream of the existing area found in July 2022 and in the survey carried out in May 2022. Work was hampered by the initial flood in January 2023 that created access issues due to channelling of the river banks and a further small flooding event in June that raised river levels impacting on access.
Control was undertaken using a mixture of the usual cut stump method and on the larger, heavier infestations and a folia spray was applied to kill or desiccate enough of the vine to provide a fuel load sufficient to be able to burn the area once the season has changed. Some work was also done on the established site with more to be undertaken later in the year as there are still several dense infestations on the northern side of the river requiring attention that were inaccessible earlier in the year.
There were 2,064 plants manually controlled over 202 grids but an estimate of plants controlled by foliar application is in excess of 150,000.

Achievements as per operational plan: - Remote survey
In June a remote sensing survey trial was undertaken over eight hectares in the East Kimberley in conjunction with a ground survey at the same period. Personnel then examined the images to identify rubber vine on those images in a blind search (GPS data of the ground survey was not provided to the searchers).
A total of 74 sites were found through a mixture of the trial and the ground survey. A total of 19 sites were flowering plants. Of those 74 sites 39 were located in the blind search. Most of the plants missed in the blind search were either small immature plants or hidden under the canopy and therefore not visible in the images. Five of the 39 sites were flowering plants but only the vegetation and not the flowers were picked up in the blind search as the flowers were hidden by foliage. Seven plants picked up by the blind search were missed in the ground search.

Analysis: A 2014 DAFWA benefit-cost analysis, estimated that the eradication of current infestations in the Kimberley would prevent damage of $10.9 million/year over a 30-year period based on agricultural impacts alone. This comes on top of the expected ecological benefits the removal of this weed from the landscape would provide to the numerous high value public environmental assets such as National Parks, Nationally Important Wetlands, Ramsar Sites and recognised Wild Rivers situated in the Kimberley. It is on this basis that the three organisations have agreed to undertake the program in partnership.



Graph 2

Performance indicator – Eradication of rubber vine: Ideally the performance indicator would be the eventual eradication of rubber vine from the Kimberley region. Data, particularly generated in the East Kimberley program demonstrates that eradication is achievable at local levels, particularly utilising the control methods learnt in that program. On that basis the work is ongoing and there is some confidence that the target is achievable high given the results to date. See Graph 2 indicating how the cumulative total of plants controlled has begun to flatten since 2022.

Recommendations: Maintain eradication program as per 2021-22 operational plan.

Gamba grass

Overview: Eradication of the gamba grass infestation on El Questro Station has been supported by the KRBA since 2013 and is managed by a partnership group made by of the following organisations –

- KRBA
- DPIRD
- DBCA

Work is largely undertaken by contractors but partner organisations also provide personnel on the ground as well as financial support.

The KRBA provides both funding and in-kind support to the program. In 2020 the KRBA agreed to take on the role of sponsor organisation for the group's SNRM funding applications and to provide financial management to the program. Other partner organisations also provide funding and in-kind contributions such as personnel to carry out the control and survey work.

Achievements as per operational plan: Only 17 plants were controlled in 2022-23 indicating this program is close to a successful concussion. In this project it was agreed by the committee that for gamba grass to be considered fully eradicated from the location it must not be observed for a period of five consecutive years.

At the close of the 2023 survey and control program –

- 6 out of 15 regions had achieved the fifth year of 'no Gamba Grass plants found.
- 9 out of 15 regions had achieved the fifth year of 'no seed bank' contributions.

Analysis: No benefit cost analysis has been carried out on the impact of gamba grass on this site however a quote from the executive summary of the report – Economic Impacts of Gamba Grass in the Northern Territory states – *Insufficient resourcing of gamba grass control efforts costs the Northern Territory tens of millions of dollars annually, most significantly in fire management and weed control, but also in lost opportunities from the growing carbon sector. These costs will continue to increase if gamba grass expands further across the Territory.*

Performance indicator: The performance indicator will be the eventual eradication of gamba grass from the Kimberley region. This work is ongoing and confidence is very high that the target is achievable given the results to date.

Recommendations: Maintain funding to the Gamba Grass Steering Committee in the 2023-24 Operational Plan.

Weed selection criteria

As a means to determine what weed programs the KRBA will support the following criteria is used as a guide –

- Has to be a **Declared Weed** in Western Australia.
- **Potential impact:** what were the projected costs to industry and environment if the weed became widespread?
- **Physiology:** (distribution, density, seed longevity, maturity, seed production etc.) What were the plant's strengths, can they be overcome? What are its weaknesses, can they be exploited?
- **Program length:** How long would the program be expected to run for? Some weed seed has a viability of one year others can remain viable in the soil for over twenty years i.e. *Mimosa pigra*.
- **Costs**:

- **Support partners:** Are there other organisations willing to be a partner in the program over its lifetime?
- **Strategic nature of infestation:** Where, or over what area is it located?
- **Chances of meeting funder expectations:** Does the program have a good chance of being successful, will it be money well spent?

Subsidies

Overview: A 100% chemical subsidy was first introduced for control of parkinsonia in May 2000 by the Kimberley Zone Control Authority (that was later to become the KRBA in 2010), later it was opened up to all declared plants. In 2004-05 the annual budget allocation for the subsidy was $12,000; that amount has increased to $100,000 for the KRBA 2021-22 budget with amounts of up to $7,500 available for individual leases. An ammunition subsidy was also established from 1st November 2019, members are entitled to claim up to $1,000 each year per entity.

Achievements as per operational plan: $33,056 was allocated to three leases for weed subsidies and just over $1,749 to three entities for ammunition subsidies in 2022-23.

Analysis: Parkinsonia control has been ongoing under this subsidy program on leases that Sturt Creek flows through for a number of years. This has reduced the impact of the weed on the pastoral activities on those leases as well as reducing the seed burden flowing downstream onto other leases and Lake Gregory. It should be noted that the Lake Gregory system is recognised as one of the best examples of a large brackish system, with inland (terminal) drainage lakes in Australia which has regular inflow and is near-permanent. It has been identified as meeting four Ramsar Criteria for listing as a Wetland of International Importance and is considered by DBCA to be a Significant Western Australian Wetland.

In addition, neem control under this program on Spring Creek Station over a number of years has reduced that weed's impact on pastoral land on that lease and the adjacent Lake Kununurra- Lake Argyle Ramsar site.

Recommendations: Maintain funding to the subsidy program based on 2023-24 operational plan budget.

Risk Management

A number of initiatives were undertaken in the 2022/23 financial year to reduce risks associated with the organisation's programs and membership activities; they were –

- Insurances maintained for 2022-23
- Insurance and licensing details for 2022-23 obtained from contractors.
- Governance and operational matters were reviewed in a SWOT analysis in February– April 2023.
- Risk management maintained as permanent agenda item at committee meetings.
- Review of the KRBA Work, Health, Safety and Environment Management Plan implemented.

Recommendations: Maintain all of the above activities into 2023-24.

Member/stakeholder engagement

Overview: Since its activation as a Regional Biosecurity Group in 2010 the KRBA has steadily increased its engagement with its members, stakeholders and the wider community through the following initiatives –

- 2013: The organisation started to send newsletters out to the membership and stakeholders, initially two per year; that was increased to four per year in 2019.
- 2017: The Committee further increased its engagement by undertaking to carry out

membership surveys every two years to formalise a two-way information flow between the organisation and the membership. The role of the surveys is to provide the committee with an understanding of the current pest priorities at station and regional levels, how they align with current KRBA programs and feedback on the effectiveness of those programs.

- 2017: '*Kimberley Cattle*' information pamphlets were created to advertise biosecurity and production activities such as wild dog control that were routinely undertaken on pastoral land. They are targeted at visitors to the region and are distributed through Visitor's Centres and some roadhouses throughout the Kimberley.
- 2018: Signage was placed at 20 sites across the Kimberley including 24-hour rest sites warning the general public of baiting activities been undertaken on pastoral land.
- 2019 the group's website was established to provide information to the wider public of the KRBA's activities.

Achievements as per operational plan: The following engagement strategies were implemented in the 2022/23 financial year –

- Quarterly newsletters were sent to members and stakeholders.
- Website was updated.
- Pamphlets distributed to Visitor's Centres (ongoing activity).

Analysis: Information from the 2022 survey showed that of the managers surveyed 70% indicated that they had good knowledge, or were reasonable familiar with the role of the KRBA, up marginally from the 65% in the 2019 survey and 61% in the 2017 survey. The percentage of managers that had no idea of what the KRBA does fell from 18% in 2017 to 0 in 2022.

From the SWOT analysis undertaken in early 2023 the following points regarding engagement were identified –

Strengths

- The committee/organisation has good relations with Government departments it works with, in particular DBCA and DPIRD. In some respects, this sets it aside from some other Regional Biosecurity Groups in WA.

Opportunities

- Collaboration with other groups (KPCA etc.) should be explored.
- The membership survey is best done face to face.
- The committee should seek membership from a wider audience through associate and full membership. EO to contact Shires for representation.
- The organisation should attempt to become a regular presence at Kimberley workshops/seminars/conferences/meetings i.e., National Rangelands Conference, KPCA AGM, PGA meetings etc.

Recommendations: Maintain all of the above activities into 2023-24.