REPORT: FERAL PIG RESEARCH PROJECTS IN THE KIMBERLEYS, 1988

General

Feral pigs are known to be present in both the east and west Kimberley regions, but there is little information on their exact distribution and abundance. The results of a questionnaire survey of Kimberley pastoralists suggest that pigs are widespread but present only in low densities and in a limited range of habitats.

We investigated the use of helicopters to find and count feral pigs, and also attempted to eradicate a small population of pigs on an island. The fieldwork gave APB Research and Protection branch staff some initial experience in feral pig control in the Kimberleys. This will be valuable if the need arises to control feral pigs in the event of outbreak of an exotic disease of livestock. The problems encountered during the trial suggest that further fieldwork is needed.

1. Helicopter survey methods

Background:

Aerial survey has been used to estimate the abundance of feral pigs in other parts of Australia. The method is generally used to obtain an index of density or abundance, but may be suitable for accurately estimating true density, at least in some habitats (Hone 1986).

Helicopter surveys have been used successfully in relatively open country harbouring large numbers of feral pigs. (Hone 1983, Saunders and Bryant 1988). In the Kimberleys feral pigs have been reported in small numbers, mainly in or near watercourses which are often heavily vegetated. Much of the surrounding country is rugged, dry and sparsely vegetated. We investigated the value of helicopter survey in these circumstances.

Study area and methods:

The survey was carried out on Oobagooma Station (Fig. 1), one of only four Kimberley pastoral properties which reported substantial numbers of feral pigs in our earlier questionnaire survey. Oobagooma includes a wide range of habitats, from tidal flats and mangroves to rugged hills and open blacksoil plains. The area has numerous watercourses which were mainly dry at the time of the survey; numerous fresh water pools persisted.

The survey covered parts of the open grassy plains, including two major watercourses (Tarraji and Robinson Rivers) and also rugged hill country to the north (Townshend, Keightly and Stewart Rivers).

The survey used a Bell 47 helicopter fitted with a horizontal boom to mark the limits of a 100m swath on the ground when the aircraft was at an altitude of 150 ft. Feral pigs, donkeys and cattle were counted within this swath for the transect survey. All counts were made from an altitude of 150 ft. at an airspeed of 60 knots, by an observer sitting at the right hand side of the aircraft. A Prevention branch officer familiar with the area was responsible for navigation and recording of counts. Two flights were made, in late afternoon and early morning, totalling 5.4 hours (approx. 3 hours of survey time, and ferry time).

Three survey methods were tried:

(i) Systematic straight line transects east-west and west-east across country which included suitable pig habitat (vegetated watercourses). North-south separation between transects was 3 km.

(ii) Following vegetated watercourses.

(iii) Systematically searching around known pools in vegetated watercourses.

(For (ii) and (iii) counts were not confined to the 100m swath; for (iii) the airspeed was often below 60 knots.

Results

		Feral Pigs	Donkeys	Cattle
(i)	Systematic transects* (4 transects totalling 74 km, equivalent to 7.4 km²)	0	39	2
(ii)	Following watercourses (single run of 30 km)	0	53	40
(iii)	Searching around river pools (approx. 60 minutes flying)	3	(not counted)	

* In the systematic transects, approx. 13 km of watercourses were covered.

Discussion

The results suggest that flying straight line transects for a quantitative survey of feral pigs is not suited to the habitats and conditions of the Kimberleys. Feral

pigs were only found by deliberate systematic searching around river pools, presumed to be a favoured habitat. Searching in this way could be used to provide an index of abundance e.g. the number of animals seen per unit searching time, or the percentage of waters with pigs present.

Although a quantitative survey based on transect counts was not successful, helicopters appear to be the only method of searching likely pig habitat in inaccessible areas. Helicopters would be essential for survey and control work in many areas of the Kimberleys because of difficult access on the ground.

The trial was carried out in mid-October, at the end of the dry season. Feral pigs might well be more widespread during the wet. However, it is likely that overall numbers are limited by the restricted amount of suitable wet, vegetated habitat available during the dry season.

2. Helicopter survey of Bigge Island

Background:

Bigge Island (Fig. 1) is one of the largest islands of the north west Kimberley (17,200 ha) and is in an area subject to illegal visits by Asian fishing vessels. A Coastwatch flight in the area has reported the presence of feral pigs on Bigge Island. This raises the possibility of island pigs being infected with an exotic disease through contact with illegal visitors, and the disease being spread to the mainland if pigs are removed from the island. There is therefore a need to confirm whether feral pigs are present on Bigge, and if so where and in what numbers.

Study area and methods

Bigge Island consists largely of rugged dissected sandstone with sparse vegetation cover. Shorelines are mainly steep and rocky, with some areas of mangroves. There are extensive areas of hummock grassland, open shrublands and woodland, described in detail by Burbidge et al (1978).

A Bell 47 helicopter was used to search the island, and put down observers to search areas of likely pig habitat. The survey concentrated on locating fresh water and areas of dense vegetation cover. The few sandy beaches were checked for tracks, and ground searches were made in the vicinity of fresh water.

Results

A total of 4 hours aerial searching and 1.5 hours of ground checks were carried out.

Fresh water was found at four points on the island, and other small pools may have been present. Much of the island appeared too dry and rugged to harbour pigs.

Ground checks at the waters failed to find any evidence of feral pig activity, and no tracks were seen on the beaches. One set of old tracks near freshwater may have been made by a dingo; dingoes were present in 1977 (McKenzie et al 1978). Numerous tracks and faeces of small macropods were found, presumably from Warabi Petrogale burbidgei and/or Little Rock-Wallaby Peradorcas concinna (McKenzie et al. 1978).

Discussion

Feral pigs were not reported on Bigge Island in earlier ground surveys (McKenzie et al 1978) and there was no evidence of pig activity in this survey, in spite of the coastwatch report. If pigs are or have been present, it is likely that the lack of suitable habitat, and predation by dingoes, would keep their numbers low.

The helicopter was successful in giving us a rapid coverage of the island and good access to areas of suitable habitat for pigs. Although aerial searches sometimes fail to find pigs when they are present (Saunders and Bryant 1988), no other method offers a similar degree of coverage in such a short time.

3. Attempted eradication of feral pigs, Sir Graham Moore Island

Background:

Feral pigs have survived on Sir Graham Moore Island (Fig. 1) since at least the 1940's. Like Bigge Island, the area is subject to illegal visits by Asian vessels. The aboriginal community at Kalumburu is known to have taken pigs from the island to the mainland, so there is some risk of an exotic disease of livestock reaching the mainland from the island.

In June 1986 the island was visited by APB and Animal Health officers. Six feral pigs were shot from a helicopter, and autopsied to determine condition and disease status (Ryan 1986). Later in 1986 eradication of the remaining pigs was attempted, using aerial baiting with 1080 fresh meat baits. No assessment was made of the effects of the baiting programme.

In September 1988, the island was visited during the APB's donkey-shooting programme. Five pigs were shot from a helicopter, and evidence of more pig activity was seen. Accordingly, APB protection branch staff in Kununurra planned another 1080 baiting programme, with funding from the Aboriginal Lands Trust. APB research staff took part to gain experience in pig control work in

the Kimberleys, and assess the use of helicopters for aerial survey and control work.

Study area and methods

Sir Graham Moore Island lies 4.5 km north of the Anjo Peninsula, north west of Kalumburu. It is a low-lying sandstone island with a raised mesa capped with laterite at the eastern end. Much of the island has a cover of open Eucalypt woodland, with areas of shrubland, grassland and swamp. The environment is described by Burbidge et al. (1978).

The island was searched initially by helicopter (Bell 47), flying at low altitude with two observers looking for animals, tracks and pads, and signs of fresh water. The search concentrated on coastal areas and around the two tidal lagoons. Tracks and pads were investigated on the ground.

Where fresh pig tracks were found, free-feed was placed nearby (within 1 m) and checked daily. We used pig pellets, grain sorghum and molasses for the feed.

When the pigs failed to take any feed, eradication was attempted by aerial and ground shooting. Pigs were sighted from the air, flushed from cover by the helicopter or by firing into cover, and found on the ground by following fresh tracks.

Whenever possible, carcasses of shot pigs were examined to determine condition, reproductive status and approximate age.

Ground checks continued during the five days of shooting, attempting to relate the fresh tracks seen to the pigs killed and those surviving.

Additional ground checks were made around fresh water on the Anjo Peninsular, to determine whether feral pigs were established on the mainland.

Results

Sightings: feral pigs were seen on five occasions in five days before shooting began, but only three individuals were involved. Two pigs were consistently seen together at the same location (four occasions). All the pigs seen in this initial survey were in poor condition, thin and obviously weak.

Tracks and pads: active pads or fresh tracks were found throughout the period of fieldwork. Because tracks were checked daily it was often possible to determine how many animals were involved. Well-used pads were visible from the helicopter in open vegetation, but not in thicker tree and shrub cover. Tracks in beach sand and mud were conspicuous.

Watering points: no fresh water was found on the island during this trial. In June 1986, small fresh water pools were found at two sites; both were dry in October 1988. We found brackish water in a well in the north west of the island; the adjacent soil was wet but pigs were not active in the immediate area. Tracks indicated that pigs were active in mangroves and on some sand beaches. It is possible that pigs were drinking fresh or brackish water from springs only exposed at low tide, but ground checks could not confirm this.

Free-feeding: seven free-feed sites were established next to active pads or fresh tracks. Pigs continued to use at least four of the pads but no bait was eaten.

Pigs killed and known survivors: shooting began when no free-feed had been taken after four days.

Between 21st and 25th October 1988, 11 pigs were shot, seven from the helicopter and four from the ground. The hunting involved 12.5 hours of helicopter time and 15 hours of ground work. The condition of the pigs killed varied. Four were in poor condition, the remainder fair to good, with some fat reserves. The teeth of five pigs were examined to estimate age. One animal was estimated to be about one year old and the degree of molar wear indicated that the other four were considerably older (well over 26 months). Four of the pigs killed were sows; two had bred previously. None were pregnant or lactating when shot.

When shooting ended on 25th October, fresh pig tracks were still present in two areas. These indicated that at least four, and perhaps up to seven, adult pigs survived.

Discussion

Conditions on the island at the time of the trial were extremely dry. Availability of water, rather than food, may be the main factor limiting the size of the pig population. Feral pigs are reported to need access to water daily once temperatures exceed 30° C (Hone et al. 1980). Average daily maximum temperatures in this region are well above 30° C throughout the year (Burbidge et al. 1978). The pigs shot and autopsied on the island in 1986 showed kidney damage which was probably associated with drinking brackish water (Ryan 1986).

From signs of feeding activity, and gross examination of the stomach contents of three pigs, it appears that the pigs were digging for root material, eating browse and grass and obtaining some food in the mud of the mangroves. We found no sign of scavenging by pigs on the carcasses of other pigs, and no evidence that they ate other available animal food such as turtle eggs. This

suggests that the use of 1080 meat baits would not have been effective.

The failure of the pigs to accept free-feed might simply represent avoidance of unfamiliar food that would be overcome with time. Baiting has proved unsuccessful in other exercises outside agricultural areas, where the pigs had had no previous contact with the commonly-used bait materials (Allen 1985). Where control is needed quickly, baiting is unlikely to be effective unless the target pigs take the free-feed readily.

On Sir Graham Moore Island, shooting proved quite effective. From the pigs killed in September and October, and from the tracks of surviving pigs, the total population before shooting began in September 1988 can be estimated at 20-23 animals. The 16 pigs shot therefore represent a reduction of 70-80%. The shooting relied heavily on ground work in the later stages.

For a small feral pig population confined to a limited area with adequate access, quick eradication should be possible by a combination of aerial and ground shooting, and hunting with dogs.

Conclusions and recommendations

The field work revealed some of the problems involved in locating and controlling feral pigs in the Kimberleys. Although systematic aerial survey proved unsuited to the habitat and pig population, the helicopter provided access to areas that would otherwise be difficult or impossible to reach. The manoeuverability of the helicopter and the excellent visibility made it ideal in searching for tracks, checking pads etc. However, the apparent visibility can be deceptive. Even in the quite open vegetation on Sir Graham Moore Island it would have been impossible to locate all the pigs without extensive ground work. It was difficult to see pigs in cover unless they were moving.

It became clear that existing estimates of pig abundance in the Kimberleys are based on very little evidence. During the West Kimberleys donkey shooting programme this year 60 feral pigs were shot, more than in any previous year. More information is needed on feral pig distribution and numbers, but the large area to be covered and the difficult access, probably preclude a specific survey on the ground. Prevention branch staff should be encouraged to follow up reports of feral pigs when their routine work takes them to suitable areas. Information on distribution, abundance, evidence of activity, age, sex and condition of animals, group size, litter size etc. would be useful.

Now that the feral pig population on Sir Graham Moore Island has been considerably reduced, some follow-up work should be done. At the least, this should involve an

annual check for pig activity for the next three years. This check should involve helicopter and ground searches, and would be more efficient if it was carried out by APB staff familiar with the recent control work. The search could be carried out during the annual donkey shoot, when helicopter and staff are available.

Alternatively, a full eradication could be attempted in the 1989 dry season, using dogs to locate the surviving pigs. The chances of success appear to be high.

APB Prevention and Research staff should be involved if a proposed BTEC exercise takes place on Oobagooma in 1989. This exercise might be extended to Sunday Island which also supports a feral pig population.

On the basis of our limited experience, 1080 baiting for pigs in the Kimberleys would require considerable time and might well fail, since the pigs are not accustomed to the bait materials normally used. Shooting from the air and hunting from the ground could reduce the population (at considerable expense) but experience in eastern Australia suggests this would tend to disperse some pigs (Allen 1986, Bryant and Saunders 1988). It may be that the Kimberleys pig population is sufficiently scattered and isolated from other pastoral areas that it does not pose an exotic disease risk. Animal Health authorities must assess the likely risks, but will probably require additional information on feral pig distribution and abundance to do so.

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