



# **GNARALOO FOX CONTROL PROGRAM**

**Protection of sea turtle rookeries on the Gnaraloo coast**

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# GNARALOO FOX CONTROL PROGRAM

## Season 2010/11

### 1 Program Objectives

The fox control program undertaken at Gnaraloo during the turtle breeding season 2010/11 - complimented the programs previously completed during the turtle breeding seasons 2009/10 and 2008/09.

The objectives of the program are to minimise towards zero all fox predation of marine turtle nests (egg clutches and hatchlings) on beaches along the coast of Gnaraloo Station, including the Gnaraloo Bay Rookery.

Assessment of the results of the fox control program 2010/11 was undertaken as part of the turtle monitoring program conducted under the *Gnaraloo Turtle Conservation Program* by the Gnaraloo Station Trust as well as by APMS staff during regular visits.

### 2 Program Methodology

Baiting was undertaken using a similar but extended program as previously employed during 2009/10 and 2008/09. This included, but was not limited to, a three-pronged strategy to immediately control foxes in the Gnaraloo Bay Rookery and in a buffer zone adjacent. Differences with the program 2010/11 compared to previous years are discussed below.

The three bait areas, as described in the 2009/10 APMS reports, consist of the following:

1. the Gnaraloo Bay Rookery (extending from Gnaraloo Bay North to Beach Point 9, an area of approximately 7 km long, as shown in Figure 1 below) where turtle nests are located, including:
  - a. the area immediately behind the beach area at the Gnaraloo Bay Rookery (refer note below) (**Core bait area**); and
  - b. the surrounding hinterland ranging from 2 to 8 km inland from the Gnaraloo Bay Rookery, given accessibility and fox activity (**Buffer bait area**).

During 2010/11, total Core bait area consisted of approximately 12 km<sup>2</sup> and total Buffer bait area consisted of approximately 198 km<sup>2</sup>. The total area baited during 2010/11 is illustrated in Figure 2 below.

**Note:** Because of domestic pets (dogs) brought by guests, baiting does not occur at the Gnaraloo Bay public area, at or around the Homestead precinct or 3Mile Camp. However, fox baits are laid in the area and surrounds at 6Mile, accessible to the public as a shore fishing area, as this is essential to protect the Gnaraloo Bay Rookery.

During 2010/11, in addition to the Core and Buffer bait areas, to minimise the number of foxes that may be moving along the coast to the Gnaraloo Bay Rookery, supplementary fox baiting was also undertaken along the coast from the 3Mile landfill area to the northern boundary of Gnaraloo (during previous years baiting only extended as far north as Cape

Farquhar), as well as from the beach up to a maximum distance inland of approximately 10-15 km. Baits were laid in areas where foxes were evident and around potential pathways and water points.

During 2009/10, it was suggested that the relatively high numbers of foxes on the western boundary of Lake MacLeod were likely to migrate to the coast during the summer months. Most young foxes would disperse into this area and the availability of food and water were likely to be factors in migration to the coast, along with a reduction of resident foxes as a result of baiting increasing the free space available. Therefore, during 2010/11, the western edge of Lake MacLeod was also baited to reduce the number of foxes in this area. This had other positive indirect biodiversity conservation outcomes in that it protects native terrestrial fauna on Gnaraloo from predation and extinction by foxes, including small to medium sized mammals, marsupials, ground nesting birds and reptiles.

Fox baiting during 2010/11 again utilised Dried Meat Baits (DMB's), field produced by Animal Pest Management Services, with some Foxoff Econobaits and 1080 impregnated egg baits also used. A total of 1,200 baits were used throughout the season.

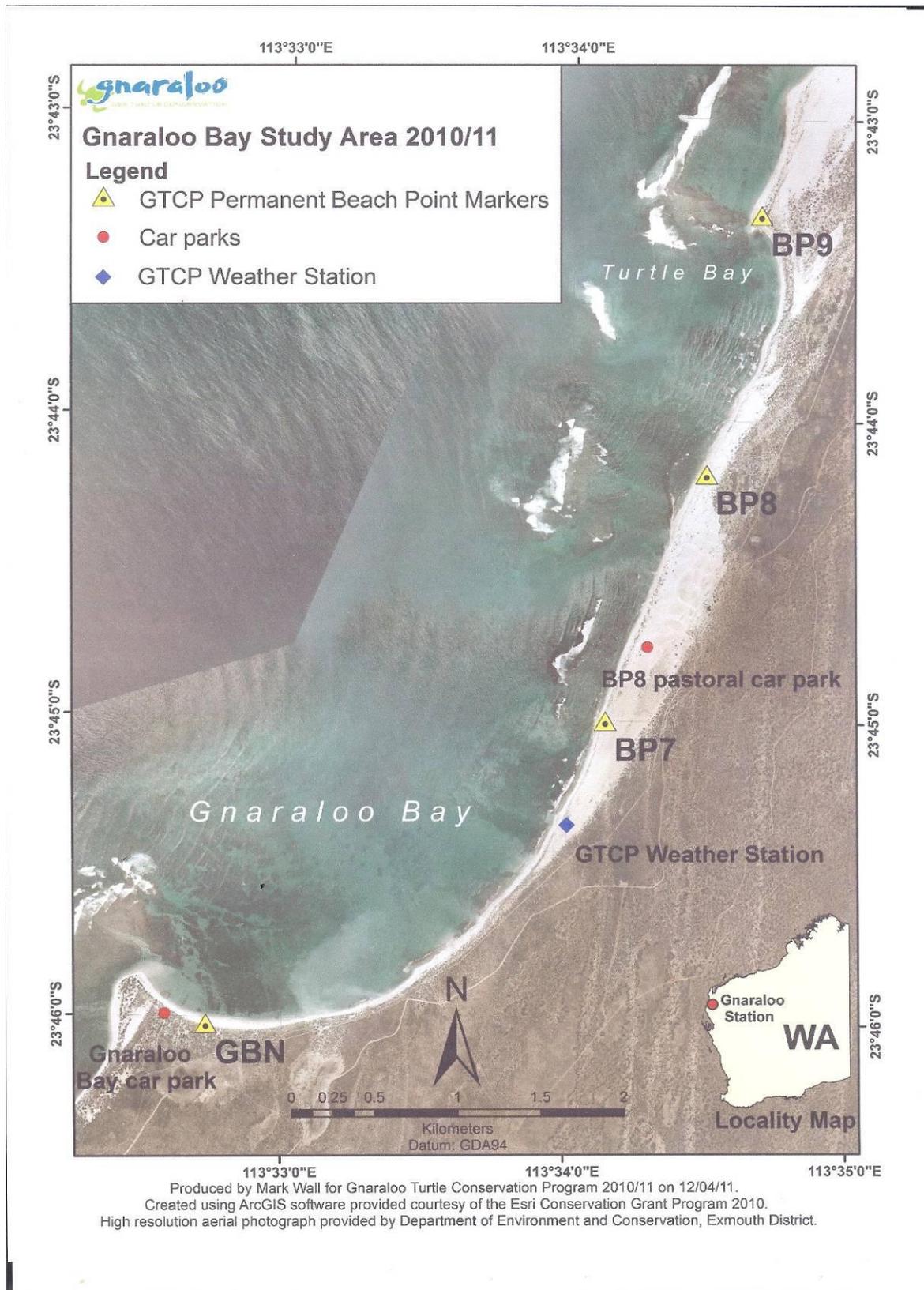
As per previous years since 2008, baits were strategically placed by APMS staff to maximise uptake based on the fox activity seen and on the activity found during previous years' programs. This method generally produces a rapid knockdown using the minimum number of baits. Bait placement was not confined to vehicle tracks to minimise the probability of foxes encountering multiple baits while ensuring all foxes movements and territories were adequately covered. The strategic bait placement was complimented by standard baiting in other areas.

Rates of bait lay varied from 4 baits/km<sup>2</sup> within the Core bait area to 2-5 baits/km<sup>2</sup> in the Buffer bait area depending on the terrain, vegetation and level of fox activity.

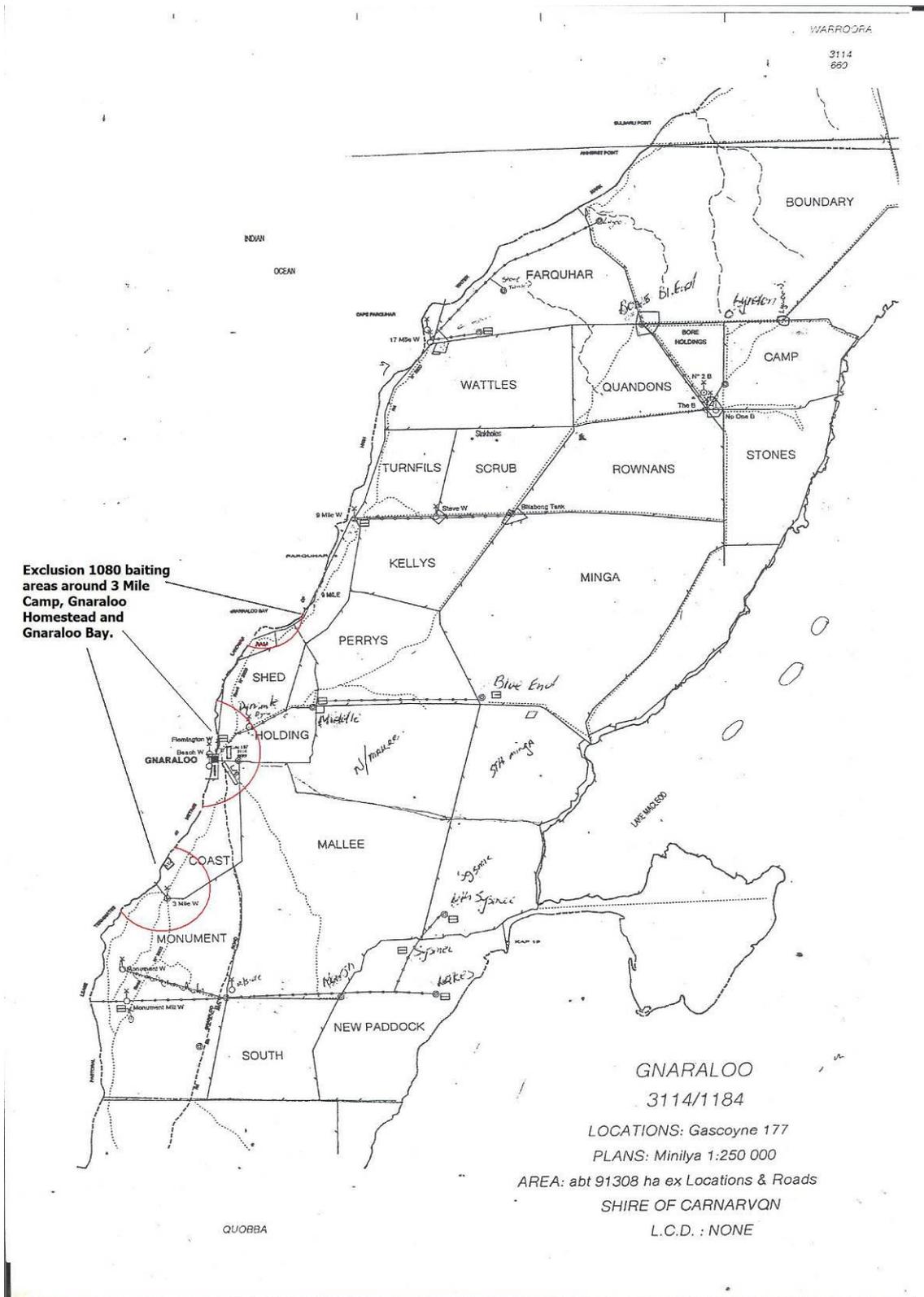
The fox baiting and assessment periods during 2010/11 occurred as follows.

No.	DATES	ACTIVITY	No. OF PERSONNEL
1	18-24 October 2010	Baiting and assessment	3
2	7-8 November 2010	Assessment – minor baiting	2
3	10 December 2010	Assessment	2
4	15-16 January 2011	Baiting	2
5	14 – 20 February 2011	Baiting and assessment	2
6	9 – 16 April 2011	Baiting and assessment	3

Monitoring occurred at 19 sites to determine the level of bait take during visits. This consisted of placing baits at plots and checking those plots for bait take and fox visitation during the period onsite.



**Figure 1:** The Gnaraloo Bay turtle rookery. Fox baiting occurred approximately 500 metres south of the GTCP Weather Station marker and continues north along the coastal strip (**Core bait area**) (Map courtesy of the *Gnaraloo Turtle Conservation Program 2010/11*).



**Figure 2:** Gnaraloo Station. Exclusion zones surrounding 3 Mile Camp, Homestead precinct and Gnaraloo Bay public area. All other accessible areas within the station property were baited for foxes.

### 3 Results

Fox numbers were determined to be at low to moderate levels across all areas at Gnaraloo, with the exception of the area near Lake MacLeod.

The monitoring season 2010/11 under the *Gnaraloo Turtle Conservation Program (GTCP)* consisted of 87 sample days, from 13 November 2010 to 7 February 2011. Along with their other work, GTCP researchers also monitor disturbance and/or predation of turtle eggs or hatchlings in the study area by foxes, cats and wild dogs, by recording tracks and any evidence of disturbances and/or predation. There were no reports of any foxes (based on evidence of fox prints) in the Gnaraloo Bay Rookery for the entire monitoring season. Accordingly, there was no disturbance or predation by foxes of turtle eggs or hatchlings in the study area during this time.

Monitoring of selected bait sites indicated that foxes removed all baits and a corresponding decrease in fox activity followed. No bait stations were visited by foxes without the fox taking the bait. In one area, no further fox activity was evident after 7 baits were taken by foxes. Fox activity rapidly declined within 24 - 48 hours of baits being laid, which suggests that bait caching is not significant during this time of the year with these baits at this baiting rate. This result is significant compared to research elsewhere which has shown that foxes visited only 23% of plots and only took baits from 64% of plots, with foxes also caching up to 25% of all baits taken (Thomson et al 2002).

The considerable rainfall that occurred at Gnaraloo throughout the season did not have an impact on the effectiveness of the baiting program. This is probably due to the type of baits used (dried meat baits) which take considerable rainfall before they are affected, as well as the higher uptake as a result of strategic bait placement.

### 4 Discussion

The results of this year's fox control program demonstrate that complete protection of sea turtle nests can be achieved through effective fox control programs. The combination of effective quality baits (use of dried meat baits as opposed to sausage baits), strategic placement (as opposed to standard bait placement), daily monitoring results throughout the season and targeted follow-up baiting means that foxes can be reduced to the level where finding evidence of foxes is the key rather than recording the level of fox predation.

This year achieved 100% protection of the turtle nests within the monitored area (namely, the Gnaraloo Bay Rookery) due to increased numbers of structured site baiting events and the removal of foxes from high risk adjoining areas prior to the dispersal of juvenile foxes towards the turtle beaches.

The need to determine where new fox threats are likely to come from and removing that threat is as important as removing all the foxes within the target area. The area around Lake MacLeod is an important ecological and biological system and the presence of foxes is also likely to have significant negative impacts on conservation values.

The control of foxes needs to be ongoing to maintain the protection of the sea turtle nests with the advantage of also protecting other high conservation areas on and adjoining Gnaraloo Station.

The following conclusion from the season-end GTCP Report 2010/11 is supported:

‘ ... in order to maintain fox numbers to a minimum it is strongly recommended that structured fox baiting events continue to be undertaken in future as soon as fox tracks are observed by GTCP researchers within the monitored rookeries and to repeat the baiting events at the beginning of each month during the turtle breeding season (November – April) and prior to the annual fox breeding season (May). This will not only protect eggs whilst incubating, but also reduce predation on emerging hatchlings later during the season’.

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