

Nest to Ocean Turtle Protection Program

Minimum requirements for monitoring

The Nest to Ocean Turtle Protection Program (NTOTPP) funds projects and activities that help to protect marine turtle eggs, hatchlings and adults from feral pigs and other predators in coastal Queensland. The objectives of the program include increasing the survival rate of marine turtles and their clutches to over 70%—and reducing feral predation impacts on marine turtle rookeries. Monitoring and reporting on these objectives must be included as part of each project.

This document provides the basic monitoring methodology and minimum standards required for all monitoring programs funded under the NTOTPP to ensure that the program objectives are reported on. Monitoring programs can exceed these standards.

Monitoring programs must be undertaken to report on the following:

- quantify the distribution and abundance of turtle nesting, by species, on beaches within the project area
- quantify subsequent losses of clutches by predator species
- report on the survival rate of marine turtles and their clutches of eggs and hatchlings
- the number of predator species removed as a result of the control program.

For example, the number of feral pigs destroyed during an aerial shooting program. Best endeavours must be made to record the number of mortalities, however where this is not possible estimates should be provided using a rigorous methodology.

Monitoring of turtle nesting may be undertaken as land-based monitoring or aerial monitoring. Land-based monitoring (Method A) is the preferred method of monitoring, however it is acknowledged that some areas of predator control may not be accessible by land due to remoteness or geographic constraints, in these circumstances aerial monitoring (Method B) may be undertaken as an alternative.

Note: all GPS data recorded during monitoring should use WGS84 and display the latitude and longitude as decimal degrees.

Method A—land-based monitoring

Land-based surveys are undertaken by foot or by vehicle on accessible beaches.

Selection of monitoring sites

Recognising that it is not cost effective or practical to sample all turtle nesting beaches where predation occurs, a subset of beaches should be used as representative indication of program effectiveness. Beaches selected for monitoring should be representative of turtle activity within the project area, should not be adjacent to one another and span the length project area.

Sample beaches should be divided into sectors, marked with a sector marker, recorded by GPS, and numbered sequentially for reporting purposes. (Note: it is recommended that sector markers are located in the upper dune above the storm surge line; solar charged garden lights can be effective marker for night visibility).

The beaches monitored must be consistent for the term of the project.

Timing

Monitoring should be undertaken during the peak turtle nesting months applicable to the location. A month that is representative of turtle nesting activity should be selective as an index month for quantifying the total marine turtle nesting activity on the sample beach.



The number of turtles coming ashore and nesting should be counted for each species, for each night of the index month. (Note: ideally daily surveys should be conducted, however if this is not possible intermittent surveys can be undertaken and noted in the results). Incidental nesting data may be recorded from outside of the index census period.

Turtle nest recording

At the commencement of the index month all turtle tracks, nests and evidence of depredation of eggs should be recorded as a baseline. Each subsequent nesting event or depredation of eggs should be recorded during patrols of the beach. A record should also be kept whether or not the turtle lays eggs.

Turtle nests should be individually marked and recorded by:

- a numbered timber stake located approximately one metre inland of the nest to enable subsequent identification of the nest—the number should be recorded on the stake to identify the nest and fate of the nest
- GPS to record the latitude and longitude of the nest and record a waypoint.

The fate of each clutch of turtle eggs laid during the index month should be monitored to determine the proportion of clutches lost to predators and those successfully producing hatchlings that cross the beach to the sea.

Clutches of eggs and hatchlings lost to causes, other than predation, should also be recorded.

Where possible, turtle species should be identified by sight or examination of track characteristics.

Reporting results of land-based survey

Reporting should include analysis of the data to report on the overall success rate of turtle nesting; photographic testimonial of monitoring techniques used; and the data recording sheets used to record turtle nesting and predation.

Method B—airial monitoring

Due to remoteness and geography of the control areas or where reconnaissance of a large geographic area is required, aerial monitoring may be the most appropriate option.

Selection of monitoring sites

Establishing monitoring sites of turtle nesting beaches should be consistent with the project area. The beaches monitored should span the length of the project area.

Monitoring needs to identify survey areas and demarcate transect lines no greater than one kilometre long. Visual references, such as creek lines, or GPS points can be used to determine transect length and to ensure consistency in approach. Data sheets should clearly identify the start and end points of monitoring transects.

The identified survey areas that are monitored and the transects flown should be consistent for the term of the project.

Timing

Monitoring should be undertaken during the turtle nesting season applicable to the location.

Aerial surveying is best conducted at dawn when the sun is at a low angle and the shadow enhances the effect of the turtle tracks. Aerial photography should supplement the monitoring, for each transect flown. Aerial photography will support and inform the monitoring program.

One to two aerial surveys should occur in the month leading up to the nesting season (i.e. June for winter nesting species), to determine the commencement of turtle nesting and any predator activity. This may also align with the timing of an aerial baiting or shooting program.

Once nesting is established, surveys should be conducted during the peak nesting period (usually one month) for 3-5 consecutive days. To determine hatchling success, it would be beneficial to repeat the intensive surveys during hatchling emergence.

The timing of the surveys should also consider monthly tidal cycles, particularly on beaches with obvious tidal fluctuations (i.e. where tides can mask nesting occurrences). For example, scheduling a flight one day prior to the optimum tide (one that peaks just at dark), the morning of that optimum tide and the morning after this tide prevents

most errors in aging crawls and gives a three-day survey window each month.

Turtle nest recording

Aerial surveying should be conducted at a speed and altitude that enables the observer to record nesting and predator data. Suggested speeds and heights can vary dependant on the species, terrain, and even density of nesting activity. One example is for a fixed wing aircraft, where the suggested speed is between 60-100kts and height varies between 60 to 250m. It is recommended not to fly too low as this can impact on the observer's ability to accurately identify and record observations. Surveys should be conducted at minimum height and at the minimum speed allowed by the aviation authorities and the Health Safety and Environment guidelines of the proponent.

The number of turtles for each species, turtle tracks, nests and depredated nests along each transect should be recorded during the aerial surveys. A photographic record should also be taken to allow later analysis of the turtle tracks to determine the number of nesting turtles, turtle species and nest predation. The aerial photography should form a panoramic record of the beach, allowing later observations about nesting endeavours on beach, to reference points along the transect flown. Incidental nesting data may also be recorded from outside of the index census period if aerial activity is being undertaken, such as during aerial shooting.

Reporting results of aerial survey

Reporting should include analysis of the data to report on the overall success rate of turtle nesting; photographic testimonial of monitoring techniques used; and the data recording sheets used to record turtle nesting and predation.

Further information

Further information about the methodology for undertaking population surveys and recording turtle observations can be found in the Research and Management Techniques for the Conservation of Sea Turtles, IUCN/SSC Marine Turtle Specialist Group Publication no. 1999. This document can be accessed from the following web address <http://iucn-mtsg.org/publications/techniques-manual-en/>