



Resilient
Landscapes

National Environmental Science Program

Before going on Country Marine Turtle Nesting Season Survey

Standard operating Procedure



Get ready to go on Country

Gather your gear

Electronic device(s) – charge ready for use, check data collection systems (e.g., Fulcrum) and navigation system (e.g., Avenza) are loaded, and load site maps.

Handheld GPS device -

Reference documents e.g., species tracks and signs

Consider

Location

Your office

Training and skills

Preparing rangers trained and competent in using and setting up:

- mapping software (e.g., ARCGIS, QGIS)
- navigation systems (e.g., Avenza)
- data collection systems (e.g., Fulcrum)

Personnel

At least one person to plan and prepare.

Timing

Prepare well before Going on Country so that you have time to gather equipment and run a training session.

Buying

Check equipment lists and get any equipment you don't have.

Check Permissions

- Which areas you can go to set up monitoring sites.
- Data sharing permission, and who it can be shared with is determined by the decision makers in the community, and any rules about who can see the data, and when they need to check back in with you for its use.

Actions

Plan

Find out the nesting season start, peak (when the most nesting happens), and end dates for the turtle species you are interested in.

You may need to do surveys of nesting beaches over a year to work out these dates.

Decide how often you will monitor. We outline two ways in this SOP, you can choose which way suits your group:

Monitor every morning for two weeks during the peak of the nesting season – This method is suitable if the nesting beach is remote.

Monitor at least 3 mornings per week for the entire nesting season – Only choose this method if the nesting beach is easy to get to and rangers can commit to surveying for the entire nesting season.

If this is the first year you are monitoring:

- Gather marine turtle nesting records in your area.
- Discuss with decision makers in the community where you can go to set up sites.
- Set up data sharing agreements e.g. with the Commonwealth Government if you would like to contribute to a big picture understanding of marine turtles.
- Check with decision makers in the community who they are happy to share data with and decide on any rules about the data.
- Check that rangers know how to use the devices, data collection apps, navigation systems etc.
- Arrange training for all trackers and surveyors.
- Check equipment lists and get any equipment you don't have.

Train

Run a training session for all trackers and surveyors to learn or refresh the following:

- How to do the survey and record data.
- Turtle species that might nest on the beach you will survey.
- For each species, pictures of and how to identify:
 - Crawls.
 - Nesting emergence.
 - Non-nesting emergence.
- Pictures of and how to identify nest predation.
- How to use devices, apps, and systems.

Choose sites

If you already have established monitoring sites, continue monitoring these sites.

If you are surveying for the first time:

- Choose which beach you will survey
- Nesting beach must be accessible by foot or vehicle
- The beach type and conditions must allow you to see and identify turtle crawls and nests.
- Wind and rainfall can affect how easily you can see and identify nesting signs.
- Define the survey area(s), if the beach is longer than 1 km, you can divide it into sections
- Maximum recommended section length is 1 km
- Record the coordinates of the start and end of the survey area/section(s).
- Give each section a unique name.
- Make labelled maps or waypoints of the section(s) start and end points for navigation. Load onto your navigation device(s).

Next step

Going on Country



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Going on Country

Marine Turtle Nesting Season Survey

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Going on Country

Gather your gear

For each team

Electronic device(s) – charged and ready to record data, take photos and navigate to sites; with:

- Ability to take photos.
- Data collection system (app and forms)
- Navigation system e.g., Avenza or handheld GPS device
- Site maps
- Turtle reference documents or field guide
- Measuring tape and/or ruler
- Spare batteries for GPS (if using)
- Power bank charged and ready to charge devices (optional)
- Clipboard with pencil and eraser, spare datasheets and maps

For each survey section

- Star pickets to mark start and end of beach survey area
- Picket driver or mallet

Personal protective equipment (PPE)

- Hat
- Sunscreen
- Sunglasses
- Long sleeve shirt
- Long pants

Consider

Location:

Turtle nesting beach

Nesting beach sections

Training and skills

Field staff trained and competent in:

- Use of data collection and navigation apps/devices.
- Survey procedures

Field staff trained and competent in Identifying:

- turtle species by tracks and signs.
- incoming and outgoing tracks.
- nesting and non – nesting emergence.
- nest predation and disturbance.

People

- 1 person to lead the survey (can also be tracker/surveyor).
- 2 trackers/surveyors for every section you plan to monitor.

Timing:

Survey during the nesting season. Start surveys at sunrise so that you can easily see and identify the crawls and nests. If repeating surveys, survey at the same time of year.

Actions

Day before monitoring starts:

- Mark the start and end of the survey area with star pickets.
- Walk the survey area and mark a line across all turtle crawls.
- Marking crawls makes it easy to tell which tracks are fresh.
- Mark crawls above the high tide line.
- Make sure that everybody uses the same way of marking crawls. For example: mark all crawls by making a clear line with your foot across the incoming and outgoing tracks above the high water mark.
- Record turtle nests you see and signs of nest disturbance or hatching.

Monitoring:

Each morning of the survey:

- From sunrise, walk from the section start along the latest high tide line. Look for turtle crawls.
- Do not record crawls outside of the section.
- When you find a crawl:
- Find the incoming (emerging) and outgoing (returning) track and follow the path taken by the turtle.
- Use the crawl markings to identify the turtle species.
- Decide if it is a fresh crawl.
- It should be fresh if it is unmarked (because you marked all the crawls the previous day).
- If it is an old crawl, do not record data.
- Decide if it is a nesting (laid eggs) or non – nesting (didn't lay eggs) crawl.
- Record the crawl data and take photos if you are unsure.
- Mark the crawl with a clear line across the incoming and outgoing tracks to show that it's been recorded. [IMAGE OF MARKED CRAWL]
- Mark the nest by making a clear line with your foot across the nest, as close to the secondary body pit as possible. [IMAGE OF MARKED NEST]
- When you reach the section end, make sure the section data is complete.

Repeat the survey each morning of the survey period.

Record

Information to record each day about each section of a nesting beach surveyed:

- Beach and section name
- Date of survey
- Start and finish time
- Names of surveyors
- Weather – wind and rainfall
- Potential causes of nest disturbance e.g. predators, human activity etc.
- Anything else of interest e.g.
- Hatched nests
- Old disturbed nests
- Presence of predators
- Information to record about each crawl found:
- Species of turtle
- GPS location for crawl
- Photo of crawl with ruler or tape measure across track for scale [IMAGE OF HOW TO TAKE PHOTO OF TRACKS]
- Nesting or non-nesting emergence. If nesting emergence, record:
- GPS location of nest
- Photo of nest
- Position of nest on the beach (choose one):
- below high-water mark (intertidal)
- above high-water mark (high water mark to edge of vegetation)
- edge of vegetation to base of dune (slope)
- base of dune and beyond (in vegetation)
- Signs of nest predation or damage
- Describe what you see
- Cause of predation or damage e.g. fox, goanna, human

Next step

After going on Country



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After going on Country

Gather your gear

- Electronic device(s) that you used to record your turtle nesting survey data.
- Data management system e.g. cloud storage.
- Computer or laptop with spreadsheet software e.g. Microsoft Excel.

Consider

Location

Your office

Training and skills

Rangers/staff managing data are trained and competent in:

- Use of data collection apps and data management system.
- Use of computer and spreadsheet software.

People

At least one data manager.

Ranger team.

Timing

As soon as possible after your surveys so that what you did and what you saw is fresh in your memory.

Check Permissions

Data sharing permission, and who it can be shared with, is given by the decision makers in the community, and any rules about who can see the data, and when they need to check back in with you for its use.

Action

- Upload your data to your data management system.
- Export the data to a spreadsheet.
- Calculate how many fresh nests were found at each section.
- You can make a simple graph showing the number of nests at each section from year to year.
- Discuss with the ranger team any reasons for nests to have increased or decreased since the previous year, or why the number of nests was different between sites.
- Discuss whether nest trends might be related to your management e.g. fox management, to check how well your management is working, or if you need to make adjustments.
- Share the data according to any data sharing or funding agreements you have made.