

Appendix E

Cable Beach Turtle Monitoring Program

Cable Beach Community Turtle Monitoring Program Overview **2021/2022 Season**

Background: The Cable Beach Community Turtle Monitoring Program began in 2006 and was run by Conservation Volunteers Australia with the aim to increase the conservation of nesting turtles on Cable Beach. In 2013, the Department of Parks and Wildlife acquired this volunteer program. Initially the program was run for 3 months from December to March. In 2014 the program was extended to a 4-month period to account for nesting activity during November.

Study area: This monitoring program was completed between November 2021 and March 2022. The study area was along a 6km stretch of Cable Beach, Broome. This 6km stretch is divided into three 2km monitoring sectors. Vehicles and camels are permitted to use approximately 3km of this 6km stretch of beach. This increases the risk of human disturbance on turtles, turtle nests and turtle hatchlings.

Objective: Increase the conservation of nesting turtles on Cable Beach through:

- **Turtle nesting census** - monitoring turtle activity along a 6km stretch of Cable Beach and recording the associated data- turtle nests, false crawls, predation, disturbance, and hatched nests
- **Training** - train volunteers to conduct census as described above
- **Communication and education** – raise awareness in the local community about nesting turtles on Cable Beach. By increasing public awareness, it will help minimize human disturbance on nesting turtles, turtle nests and hatchlings.
- **Indigenous engagement and partnership** – promote cross cultural knowledge exchange through partnerships with Yawuru

Volunteer statistics

- Volunteers registered: 71, with 45 volunteers remaining at the end of the season
- Kilometres walked: 1800km
- Monitoring days completed: 120 days
- Volunteer hours: 1440 (not including volunteer management of roster and sectors)
- Jan Lewis (volunteer)- management of the volunteer roster throughout the season
- Sector leaders (volunteers)- Steve Kelsall, Lynn Rofe, Tania Binning

Staff involvement

- Tablet refresher and sign marking training - 3 Yawuru Rangers trained
- Yawuru Rangers Preston Manado, Curtis Robinson and Peter Roe led the turtle nest signage twice a week during the monitoring program. Assistance from Melanie Edgar (Yawuru Communications Officer)
- Melanie Edgar, Sharon Ferguson (Regional Interpretation Officer), Madeline Hermawan (Visitor Communications Officer), Nicole Godfrey (Operations Officer, Nature Conservation), and Wil Bennett (Yawuru Parks Coordinator) were involved in monitoring walks
- Melanie Edgar running 2 turtle education walks throughout the season
- Total of 769.5 hours in project coordination and installation of signage by Rangers
- 153 hours of staff participating in monitoring walks

Education and communication activities

1. Facebook

Key messages-

- How to view turtle nesting, the Turtle Watchers Code of Conduct (TWCOG)
- How to not disturb nests- no driving in the sand dunes, purpose of the monitoring program, purpose of beach closures
- advertisement for monitoring program and education walks, hatchling education-hatching
- process and what to do if you see a turtle
- End of season thankyou and statistics

Posts completed: 8

Date	Post	People reached	Post engagements	Reactions	Comments	Shares
4/4/22	End of season	6722	580	82	3	6
19/1/22	Education walk	4267	97	17	5	4
23/12/21	Turtle facts	4764	179	43	5	7
3/12/21	Turtle code of conduct	4764	217	63	1	14
5/11/21	Signing up for turtle monitoring	4569	108	29	10	6
8/10/21	Signing up for turtle monitoring	7567	447	90	23	21
7/10/21	Are you interested in turtle monitoring?	10247	656	90	46	20
4/10/21	Marine parks and flat back turtles	2022	120	39	0	2
	Total	44922	2404	453	93	80

2. Radio interview and articles

- Article- 3 on the Shire of Broome Facebook page

3. Promotion

- Program promoted: October school holiday program, Shinju, Facebook, Turtle Monitoring Education Walks x 2 (11/11/2021 and 20/01/2022)

4. Brochure distribution

- Kimberley turtle brochure distributed to Caravan Parks and Visitor Centres, and on education walks

5. School holiday program activity

- October 2021 (Broome Boulevard)- Sea turtle awareness- cut out and colour in turtle backpacks, and paper plate turtle life cycles (30 children involved)

6. Training and events

- 23rd and 24th October 2021 - Start of the season- volunteer theory and practical nesting training session
- 18th October 2021 - Start of season- meeting with Yawuru Rangers to discuss components of program
- 19h November 2021 - Start of hatching season- volunteer hatchling theory training session-evening

- 18th March 2022 - End of season windup- opportunity to thank volunteers and to receive feedback
- Ad-hoc training of new volunteers during the season- 4 times

Community awareness generated

- An increase in community awareness of nesting turtles on Cable Beach. Seen through an increased amount of people on the beach, looking at the sign posted nests for turtle hatchling activity
- Volunteers supported beach closures during nesting season; volunteers approached vehicles that were on the beach during closure times to inform them why the beach closures were in place and the impacts they were potentially having on sea turtles by camping on the beach.
- A petition created by the Turtle Monitoring volunteers last season was received by Shire, to review beach access to *determine the best management options for protecting nesting turtles and hatchlings*. Shire noted the findings of a subsequent review by the Yawuru Parks Council working group in November 2021 and is due to give further consideration in 2022 on implementing the review recommendation to close the beach for 2 months of the turtle laying and nesting season.

Turtle activity statistics- Cable Beach- 6km transect

1. Number of turtle nests recorded overall: 56 (signs installed on all nests)
 - Flatback turtle (*natator depressus*) nests: 54
 - Green turtle (*Chelonia mydas*) nests: 1
 - Unidentified: 1
2. Number of false crawls recorded overall: 17 Flatback turtle (*natator-depressus*)
3. Number of hatched nests recorded overall: 25 Flatback turtle (*natator-depressus*)

Nest Disturbances/predation

- Predation: 5 nests directly predated (dog, cat, crab, goanna)
1. **Vehicles driving over nests** (only those that were posted on Facebook by the public on the Broome Natural Environment page)
 - Vehicle driven into dunes within 3m of nest (26/11/21)
 - Vehicle driven into dunes within 3m of nest (1/1/22)
 - Vehicle driven into dunes within 3m of nest (29/1/22)
 2. **Hatchlings transported closer to the water due to getting stuck in tyre ruts: 12**

Cable Beach Volunteer Turtle Monitoring Program Statistics 2017-

2021

Summary

Monitoring including the of abundance of turtle nests and the presence of tyre ruts within the 6km stretch (*data collection was added this season to account for systematic records of tyre ruts*)

The 2021/2022, 4-month turtle activity monitoring at Cable Beach recorded a lower number of nests than the previous three seasons. To be able to accurately monitor and detect trends in turtle nesting at Cable Beach, there is a need for long term data collection. To be able to accurately assess the status and identify any trends in the nesting turtle population, decades of monitoring are required (Limpus, 2007). The total number of nesting attempts can vary from year to year (Dalleau et al., 2012).

Continuing this monitoring program will ensure that data is consistently collected in the same manner, at the same time of year, so that a long-term database can be established. This will ensure accurate interpretation of sea turtle nesting trends and abundance at Cable Beach.

Figure 2 and 3 provides an overview of the turtle nesting success over the last 7 seasons.

21/22 data collection was adjusted on the request of the Yawuru Parks Council, to enable vehicle track photos to be consistently recorded by all monitors daily. The data collected has been added to this turtle monitoring season to account for systematic records of tyre ruts

Data collected during this season indicates a positive presence of tracks recorded each morning in Sectors 2 & 3 for all overnight tides below 9m. No tracks were present on tides over 9m meaning a clear rut-free run to the sea for any hatchlings emerging after high tide (no way of telling when during the night they were emerging).

However, many of the worst offending incidents of people driving above the high tide mark were during those big tides, even though the beach access gate is shut two hours ahead of high tides above 9m.



Spring tide



neap tide



Dead hatchling – run over, found by volunteers 17/1/2022, on a big tide



Dead hatchlings in tyre ruts- 30/11/21 on neap tide



Facebook post- shared to the Broome Natural page– dead hatchling in tyre rut 12/12/2021 – neap tide

Table 1. Historical data of nesting success, predation of nests and volunteer involvement in the Cable Beach Community Turtle Monitoring Program from 2017-2022.

Season	False Crawls	Sector with most nests	Predation within 5m	Hatched nests	Volunteers involved	Total days monitored
2017/2018	10	2	11 predated nests, 92 disturbances	7	52	120
2018/2019	43	2	7 predated nests, 116 disturbances	36	71	120
2019/2020	40	2	8 predated nests, 38 disturbances	38	80	120
2020/2021	29	2	No data input	17	70	120
2021/2022	17	2	5 predated nests, 55 disturbances	25	78	120

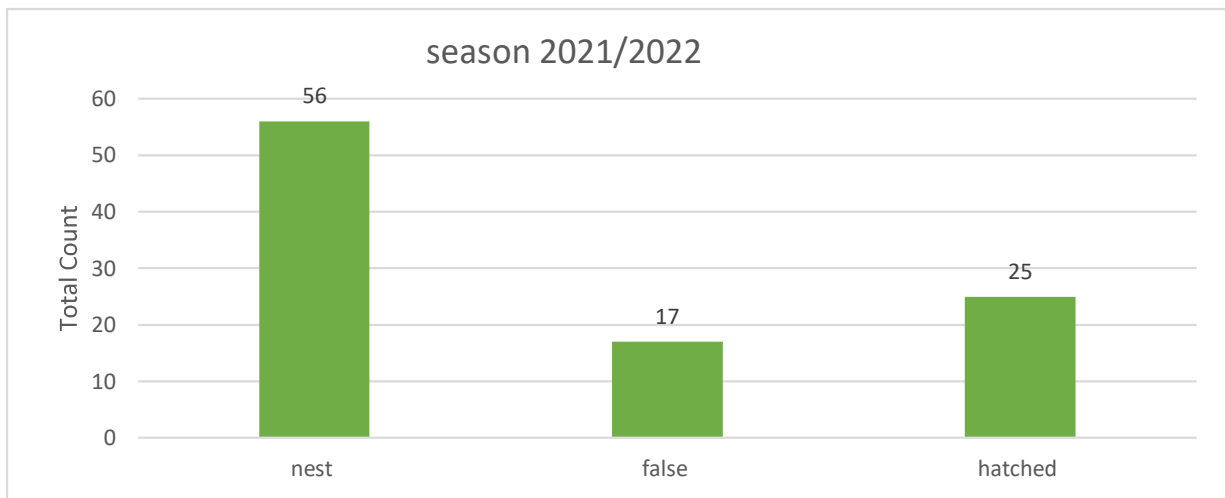


Figure 1. 2021 -2022 Season count of turtle false crawls, nests, and hatched nests within the 6km transect during 120 days of monitoring on Cable Beach from 1/11/21 -28/2/22. 31 nests did not hatch 45% hatched. Last year 28.3% hatched.

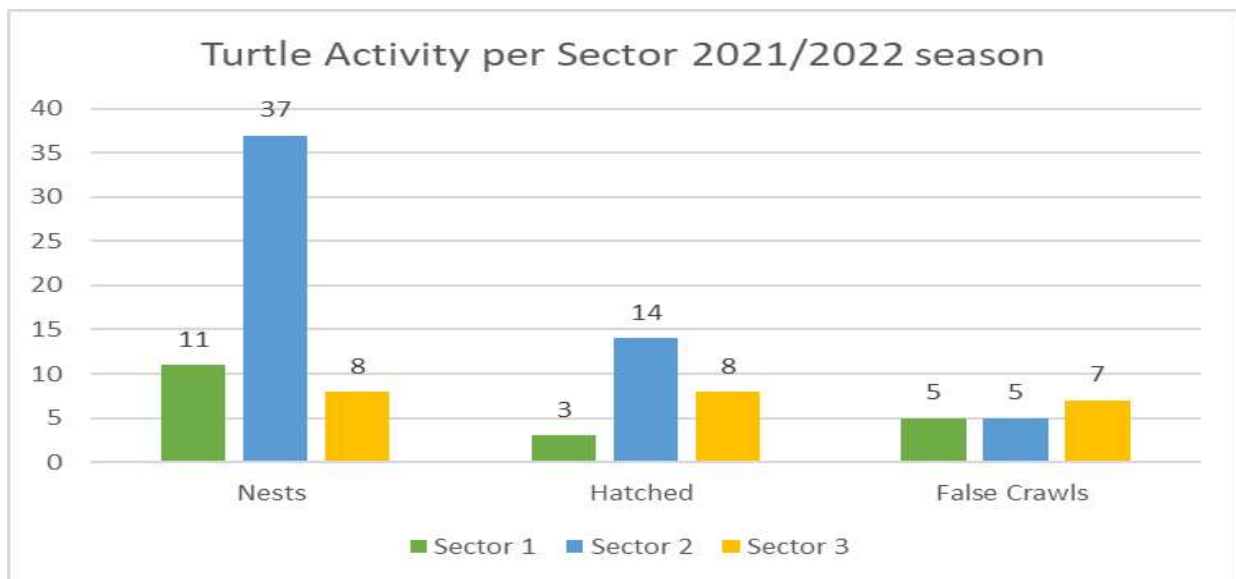


Figure 2. 2021-2022 Season count of turtle false crawls, nests, and hatched nests between sectors within the 6km transect during 120 days of monitoring on Cable Beach from 1/11/21-28/2/22.

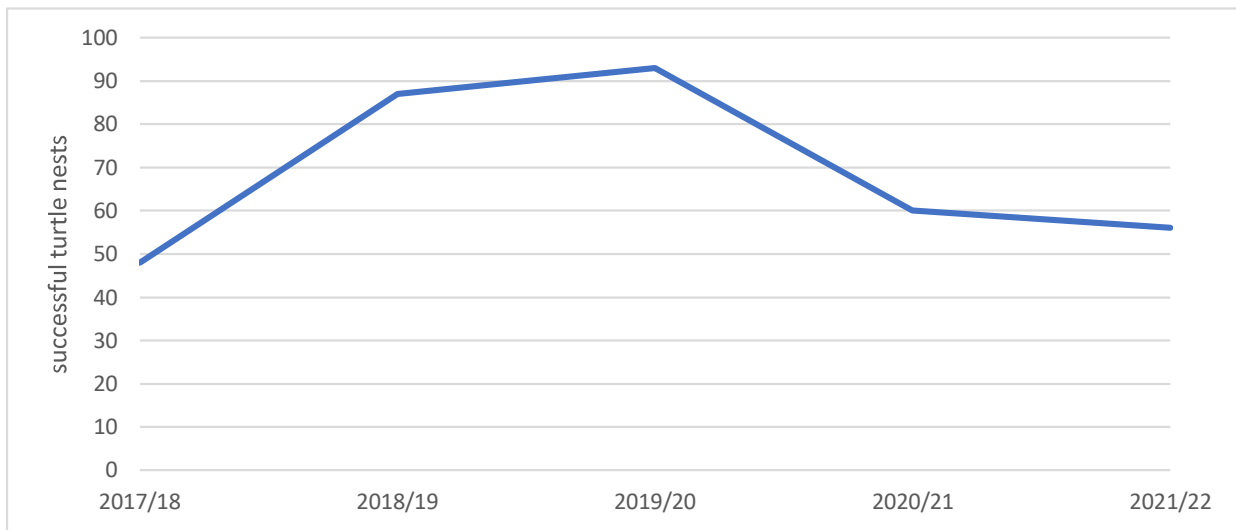


Figure 3. Successful turtle nests between seasons from 2017/2018-2020/2021/2022 within the 6km transect during 120 days of monitoring on Cable Beach.

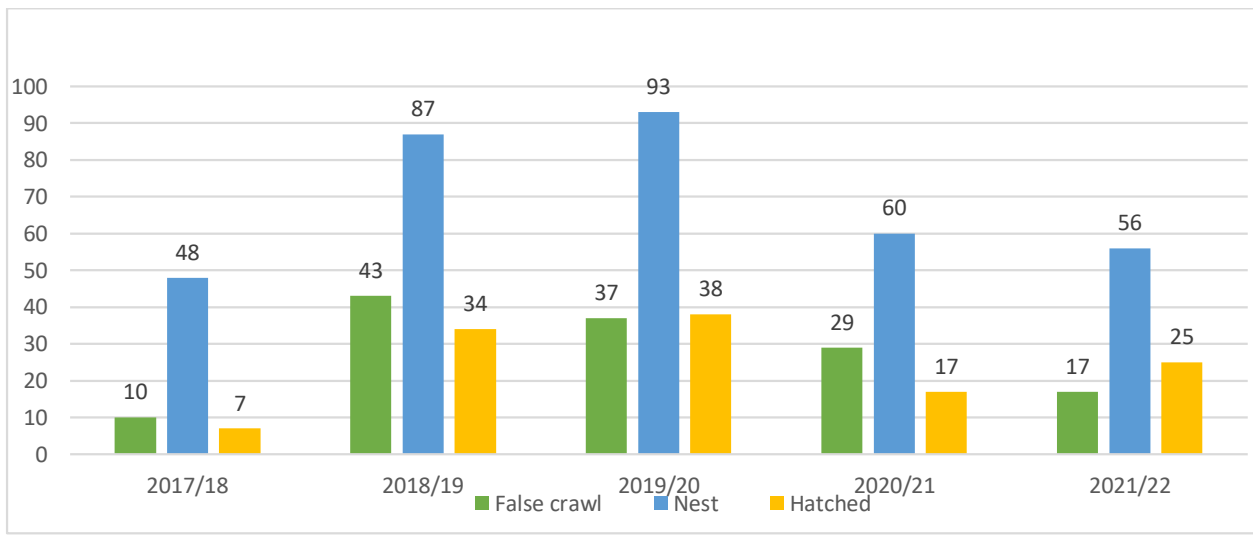


Figure 4. Yearly season counts of turtle false crawls, nests and hatched nests within the 6km transect during 120 days of monitoring on Cable Beach.

Data collection method

The ODK Collect app was used to gather turtle activity, predation of turtle nests and animal stranding data and subsequently uploaded to the Western Australian Sea Turtle Database (WAStD). Feedback from volunteers undertaking data entry in the field found that it was difficult to remember the processes to follow when inputting data. They advised that when an error was made it could not be corrected, creating data accuracy issues. They suggested that the application be refined to make it more user-friendly and less time consuming.

Volunteer feedback

Google forms survey completed by volunteers

Table 2. Google forms feedback survey outcomes, 2021-22 season.

Question	Average answer (1 lowest-5 highest)
Please rate your enjoyment of the program	4
Did you find the initial training provided was adequate to your needs?	4
Did you find the hatchling training was adequate to your needs?	4
Did you understand all the program protocols. Eg how confident are you at doing the survey, identifying key features, using the tablet and app, using the equipment etc	4
Did the roster suit your availability?	92.9% yes
How do you rate the equipment provided?	4
Has your knowledge of Kimberley Sea Turtles improved since starting the program?	5
How would you rate the communication methods to volunteers?	4
Do you feel you are contributing to research of Flatback turtles?	5
Rate your overall experience with the turtle monitoring program	4
Do you have any feedback on the Parks and Wildlife Service staff involvement in the program?	See table 3
Would you recommend this program to other volunteers?	92.9 % yes
Would you like to be contacted about volunteering again next season?	71.4% yes
Do you have any suggestions for ways the program could be improved?	See table 3
Do you have any other comments or feedback?	See table 3

Table 3. Volunteer feedback, 2020-2021 season

Nesting	- Markers that were used to write the date and hatchling estimated date rubbed off over time.
Training	<ul style="list-style-type: none"> - Suggested that there is more time to be spent training people to use the tablet - Better instructions on how to use the tablet would be helpful - Ongoing training during the season, for those that missed the initial training - More tablet training in the meeting room rather than outside
Volunteer Management	- The group WhatsApp not helpful as too much conversation and volunteers missing messages I would like to go back to communicating via Facebook instead of WhatsApp. It is difficult to put extra photos into the tablets.
Recording system	Also, could not take off name of person who last was the recorder. We also found the tablet to be a little temperamental at times. Icons would shift, Geo point map sometimes would not appear, and reports would not save
Additional suggestions	<ul style="list-style-type: none"> - More options to do different sectors - Use a simpler app to record data

	<ul style="list-style-type: none"> - Additional training and to put inexperienced volunteers with experienced volunteers
Positive comments	<ul style="list-style-type: none"> - Overall, I loved my experience and look forward to participating next year 😊 🙌 - Lyn Rolfe, the Volunteer Coordinator I had for Section 1 always responded to any queries and was helpful. I look forward to participating next season!!! :)

Problems encountered by Coordinator

- Significant reduction in volunteer numbers by the end of the season
- Viewing data on the WASTD system - data was not visible for some time and therefore difficult to make management decisions at short notice
- Unable to find the predator prints in 5m radius data on the WASTD
- Difficult to match the nests that have hatched
- Many volunteers did not place the ID on the data making it difficult to match the hatched nests

Recommendations

Suggested changes / projects for next season

Projects

- Improved nest marker signage – permanent marker of date marked and expected hatching dates faded over time.
- Review tablets use and ODK system. Revamp instruction sheets as they are confusing. Review the practical training on Day 2 so each person or couple can use the tablet.
- Interpretation turtle signage designed for Cable Beach (to be part of the Cable Beach Foreshore Development)
- Continue vehicle ramp signage to inform people why the beach access is closed at certain dates and times.
- Consider running another Eighty Mile Beach nesting experience trip as an incentive for volunteers (COVID risk dependent)
- Purchasing of fat bikes for monitoring sector 3 due to the distance and fatigue of volunteers.
- Meetings and training for new volunteers part-way through the season
- Additional social media posts during the turtle nesting/hatching season to continue to communicate the programs key messages
- Beach closure for vehicles to continue to be reviewed alongside the Yawuru Park Council to discuss with Marine Science: explore science monitoring techniques to DNA / Satellite track nesting turtles on Cable Beach to see if they are moving from other nesting beaches. Volunteers are keen to see an exhumation study.
- Sector leaders and roster coordinator continued to work very well. Relinquished a large amount of work from communications staff.
- Review how we can retain or attract volunteers towards the end of the season, particularly Sector 3, as there were many absences at the last minute that required DBCA staff to step in.

Changes to the program



Department of **Biodiversity,
Conservation and Attractions**



- New program coordinator at start of season
- Wind-up event was successfully hosted on Cable Beach outside due to COVID restrictions

References

Dalleau M, Ciccione S, Mortimer JA, Garnier J, Benhamou S, Bourjea J., (2012) Nesting phenology of marine turtles: insights from a regional comparative analysis on green turtle (*Chelonia mydas*). PLoS ONE 7: e46920

Limpus, C.J., 2007, *A biological review of Australian marine turtles. 5. Flatback Turtle Natator depressus (Garman)*. Environmental Protection Agency, Queensland