



'NSW TurtleWatch': how citizen science can manage an uncertain future.

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SAVING OUR SPECIES



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Acknowledgement of Country

Sea turtle hatchling release at Fingal Head, May 2021



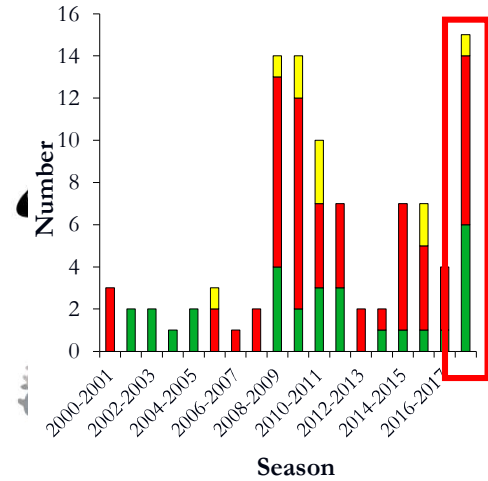
Photo Credit:
Ashi Hilmer

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Background



- Make Turtles Count – 2008
- Re-developed in 2017
- SOS funding 2018/19
- 2019/20 NSW TurtleWatch



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Importance



- threatened species

1 out of 1,000 will survive to reach maturity

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Species

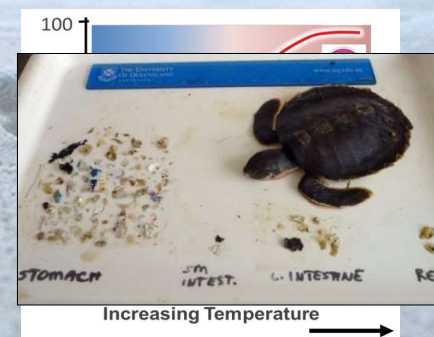
- Green turtle
(*Chelonia mydas*)
= Vulnerable
- Loggerhead turtle
(*Caretta caretta*)
= Endangered



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Importance

- threatened species
- impacts of global warming
- human interference



1 out of 1,000 will survive to reach maturity

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Historical Review

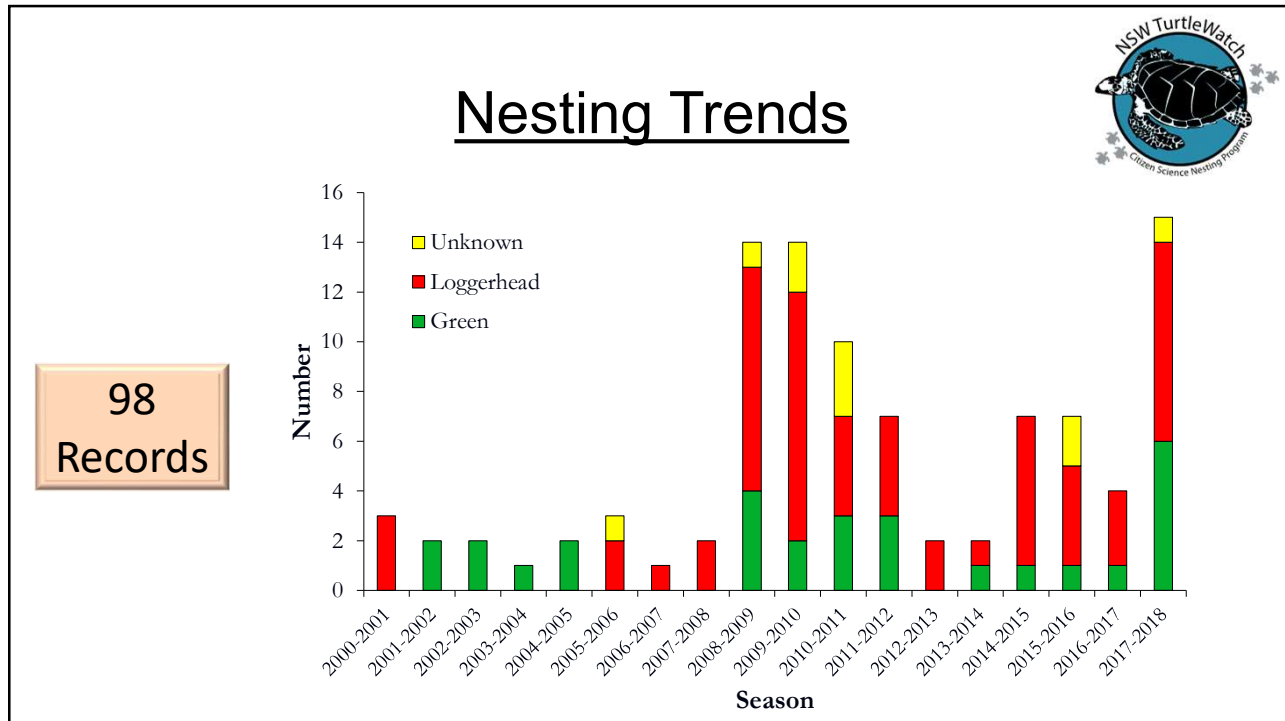
- Trends
- Distribution & Density
- Fate of Nests

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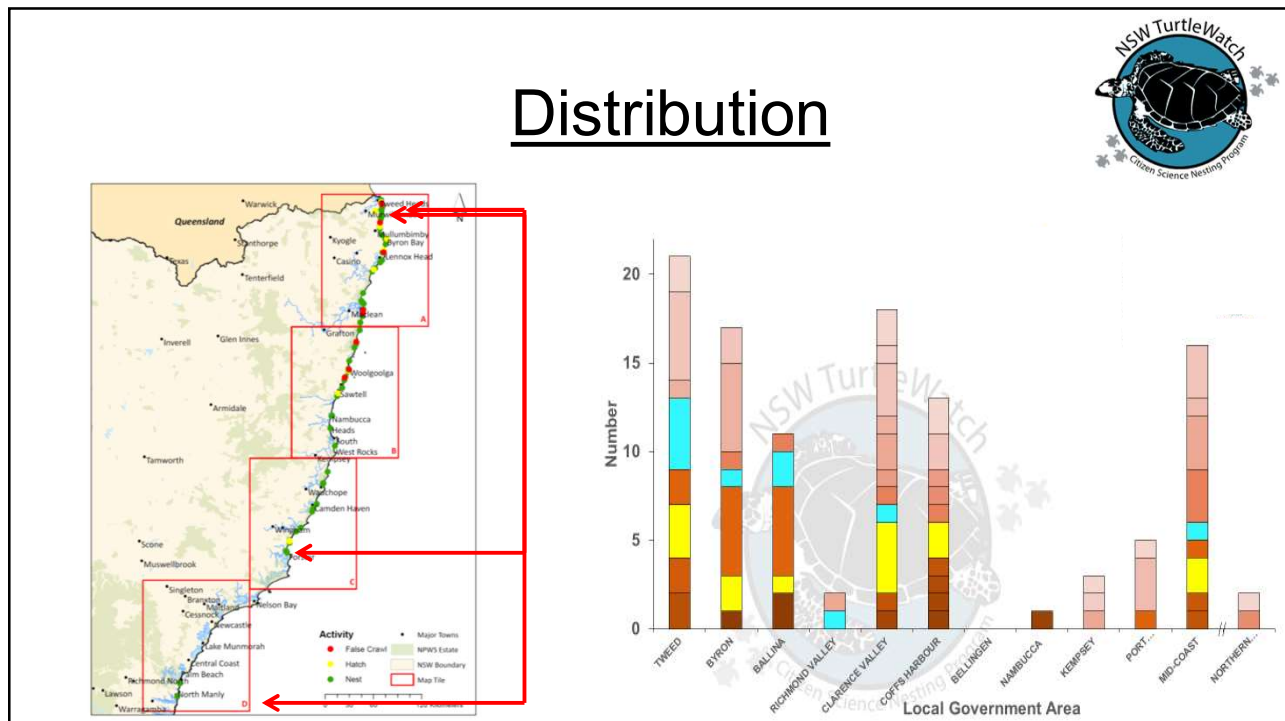


Historical Review - Results


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Fate of Nests




Photo: Mote STCRP

Incubation Time

Sand Temperature

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Historical Review

- Trends
- Distribution & Density
- Fate of Nests

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NSW TurtleWatch – Development

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Research



10 Principles of Citizen Science

<https://citizenscience.org.au/10-principles-of-citizen-science/>



SEED
SHARING AND ENABLING ENVIRONMENTAL DATA

<https://www.seed.nsw.gov.au/citizen-science-hub-project-guide>

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Development

- Citizen Science
- Community Engagement
- Nest Monitoring
- App Launch
- Communication and Engagement Plan
- Nest Monitoring Guidelines



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App Launch

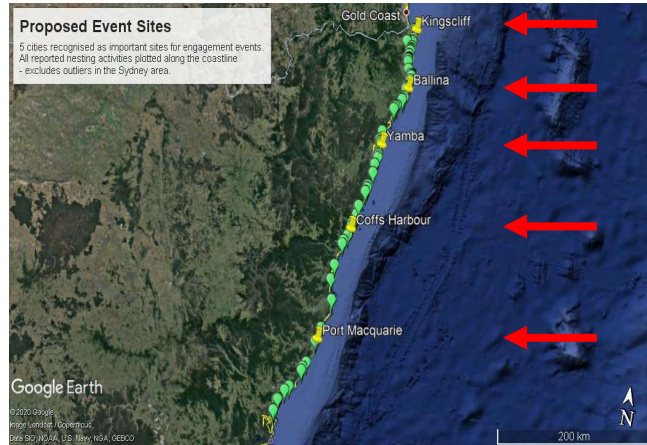
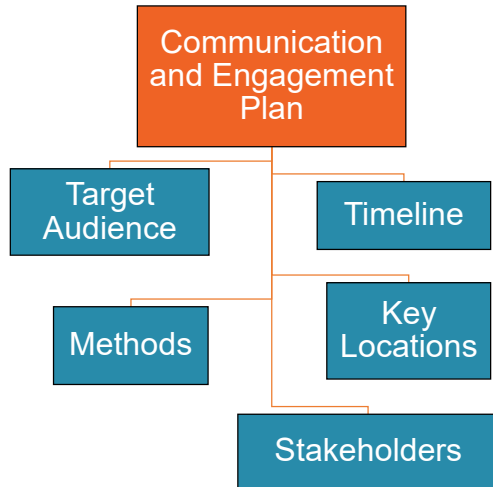
The collage displays four key screens from the NSW TurtleWatch Beach Patrol app:

- Splash Screen:** A green background with the ArcGIS Survey123 logo and the Esri logo.
- Read Before Start:** A screen with instructions: "Please READ before you start", "Call ASR Immediately if you see a sea turtle on the beach", and "Remember to walk along the last high tide to look for turtle tracks, see pictures below." It includes photos of "Loggerhead track" and "Green track".
- Map Your Walk:** A map interface with a search bar, a "Click on the 'line' on the bottom left of the screen to map your walk" instruction, and a "10 m" scale indicator.
- Threats:** A checklist titled "Threats" with options for "Marine Debris", "Domestic Animals", "Native Predators", "Vehicle Impacts", and "Vegetation".

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Public Awareness



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COVID-19 Response

- Small group beach cleanup events.
- Online training tutorials.
- Monthly newsletter updates.



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Data Consistency



NSW TurtleWatch Program - Turtle Nesting DataSheet

NEST LOCATION INFO

Date laid: _____ Exact / Estimate Person who Found: _____
 Beach: _____ GPS: _____, _____, _____ Elevation ID: _____
 Location Description: _____
 4WD: Y / N Dig Beach: Y / N Within NP: Y / N Photos: Y / N Light Present: Y / N

Nest Information

Species: _____ Female Sex: / Nest Verified / Nest Unverified / False Crowl
 Nest site: Below tide / Below slope / Grass slope / 1st Dune / 2nd Dune
 Nest cover: Under tree / Under shrub / No grass / Bare sand

Crowl Diagram

Temperature

Date Deployed: _____
 Time Deployed: _____
 Depth: _____
 Date Retrieved: _____
 Time Retrieved: _____

Hatch

Drop: _____
 Hatch: _____
 Excavator: _____
 Date: _____
 Excavator: _____
 Depth to 1st egg: _____
 Egg shells: _____
 Pipped: _____
 Total Clutch: _____
 Hatch Success: _____

NOTES

Excavation DataSheet

Nest ID: _____ Date Laid: _____ Date Hatched: _____ Excavation Date: _____

Species: _____ Genetic Sample: Yes / No If Yes how many samples: _____

Recorder: _____ Excavator/s: _____ Start time: _____

Depth to top of nest: _____ Depth to bottom of nest: _____ End time: _____

Temperature Data Logger Retrieved: Yes / No Time: _____ Serial #: _____

empty shells	live hatchlings	dead hatchlings	un-developed	1st stage	2nd stage	3rd stage	4th stage	5th stage	6th stage	Depredated	live pipped	dead pipped

TOTAL laid = empty shells + undeveloped + unhatched eggs = _____
 Hatching success rate = empty shells / total laid *100 = _____
 Emergence success rate = empty shells - (live hatchlings + dead hatchlings) / total laid *100 = _____

NOTES:

AUSTRALIAN SEABIRD RESCUE INC.
NSW TurtleWatch
Beach Monitoring Guidelines
2020 - 2021

Turtles will only be on a beach, either to nest (larger turtles - 70cm+) or if they are sick (any size turtle). Do not return sick turtles to the ocean. Move them above the high tide mark and cover with a wet towel to protect from the sun. Call Australian Seabird Rescue immediately on: 042885282

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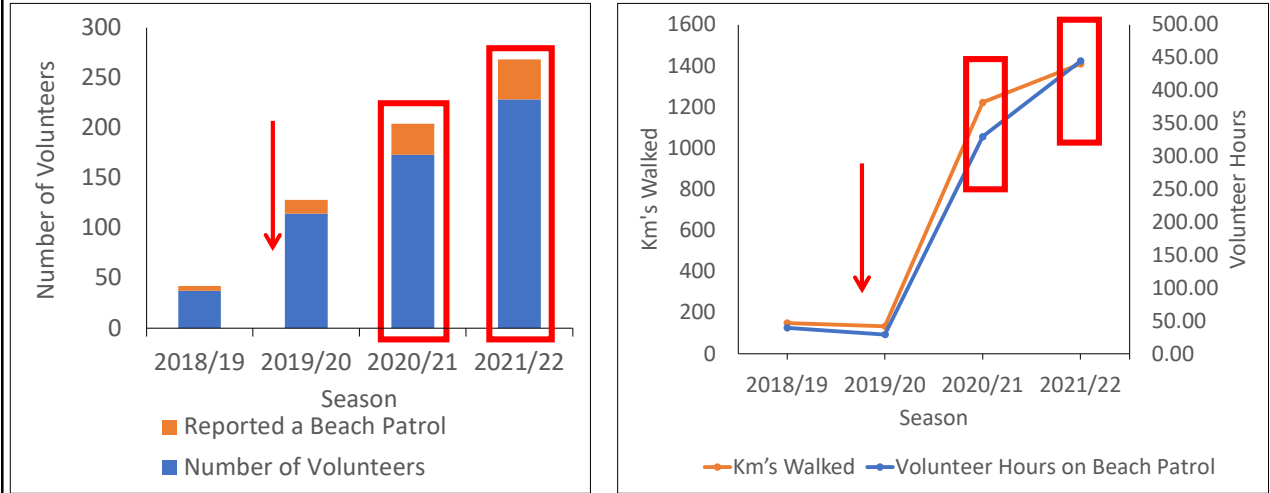
19



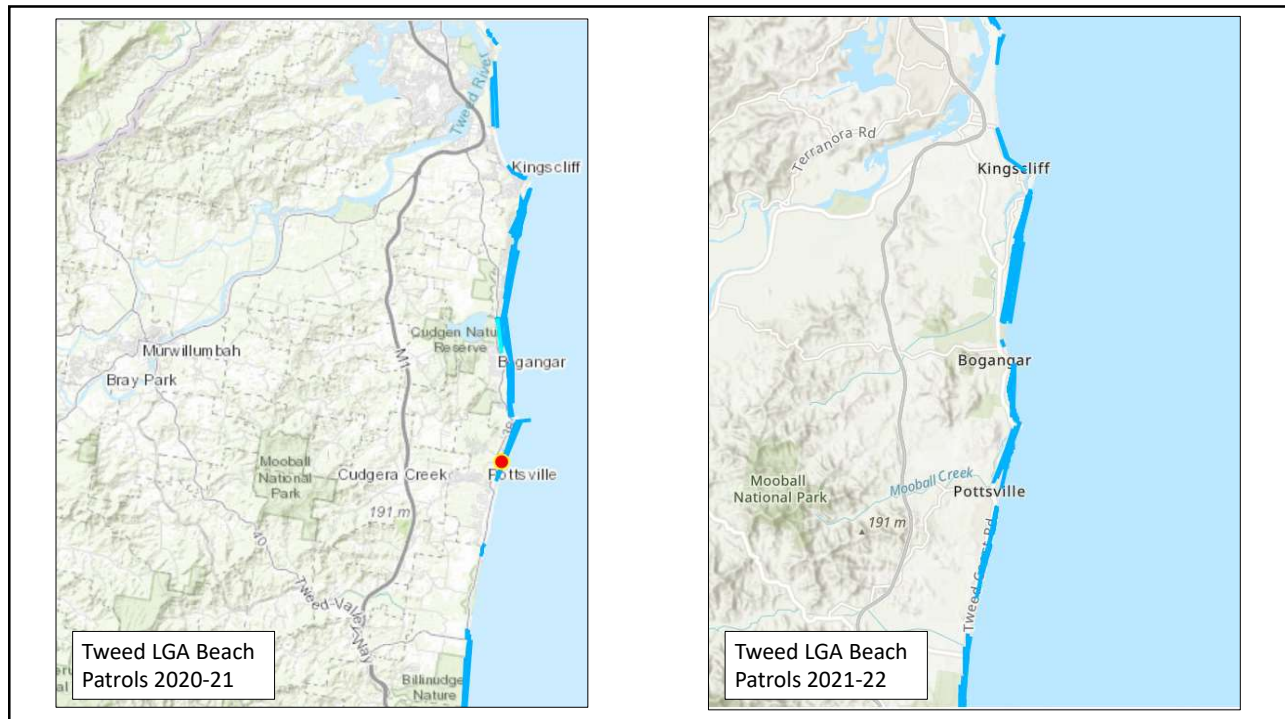
Evaluation

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Citizen Scientist Participation



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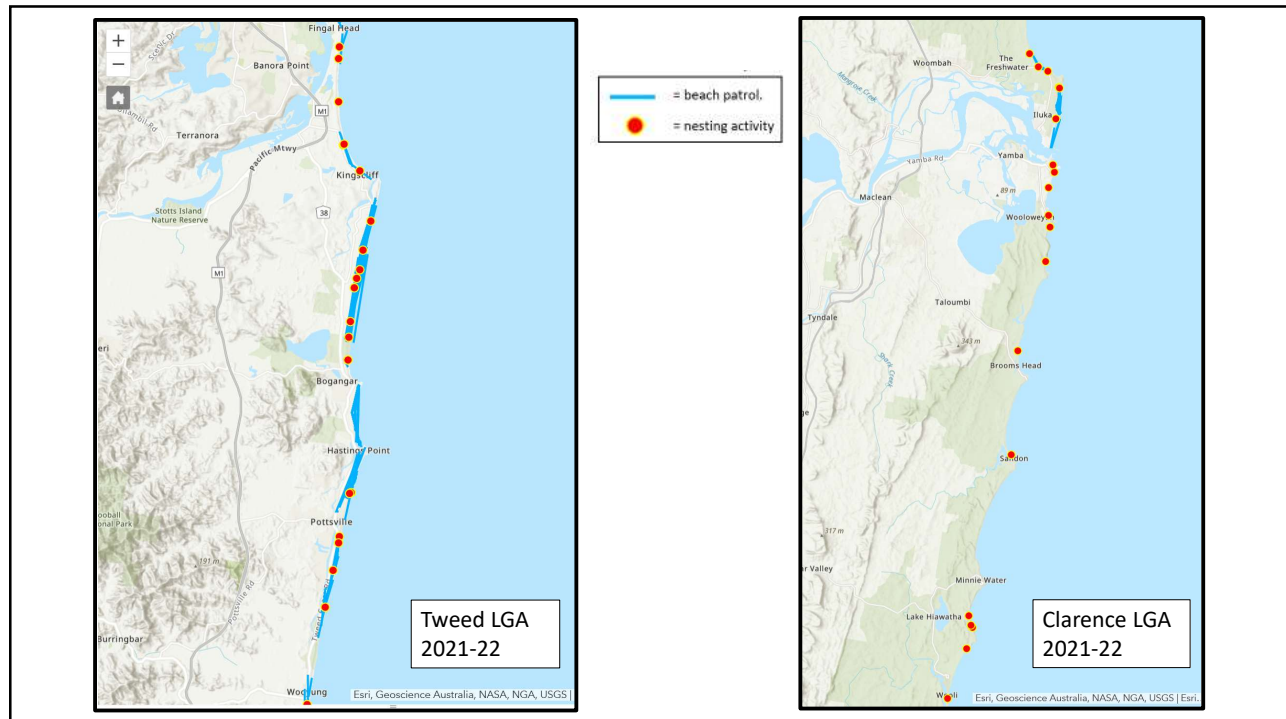
App Evaluation



- Increase in reporting through App.
- Reporting of nesting activities.
- Feedback requested.
- Rubbish collected reported to Tangaroa Blue.
- Increased reporting of light pollution parameters.



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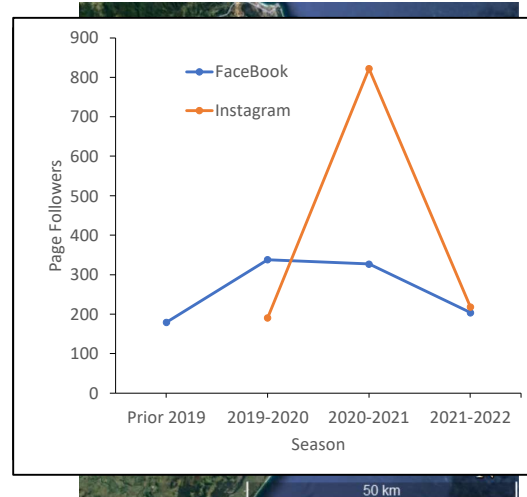


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Engagement Assessment



- Public Surveys.
 - Showed increased awareness of sea turtles and threats.
- Media doubled from 2019/20 to 2020/21 season.
- Social Media – Reach increased by 10k



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Nest Management Achievements



- Full data parameters collected for nest site.
- Deployment of temperature data loggers.
- NPWS involvement and feedback.
- 2021/22 season 4 relocated nests, 69-98% hatch success.



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Local Story – Kingscliff Nest




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Hatch Success 96.7%



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- Citizen Scientists
- Community Engagement
- Nest Monitoring

NSW TurtleWatch

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Thank You

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 @NSWTurtleWatch
www.facebook.com/NSWTurtleWatch









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AUSTRALIAN MARINE DEBRIS INITIATIVE



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