

# NESTING TURTLE MONITORING

## FIELD GUIDELINES FOR EJF STAFF AND PATROL TEAMS



## It is very important you take on the following messages when you are undertaking your nesting patrols for your welfare as well as the welfare of the turtles.

When walking on the nesting beach, **make sure your flashlight is off**. Sea turtles are very sensitive to light and you may cause turtles close by to abandon nesting and lose their eggs. Make sure your phone is on silent too.

### When you see a turtle on the beach:

- Make no noise!
- Make sure all flashlights are off, including from phones and torches.
- Stay at least 15 metres away from the turtle. If she hasn't begun to nest, wait for her to begin nesting. The nesting process can take up to two hours.
- Once she has begun to lay her eggs, very carefully approach the turtle from behind and collect the specific data like shell length.
- If you need to use a light, use red light
- Flashlights should be kept to barest minimum during nesting. If you need to use a flashlight:
  - Only use from behind the turtle, never in front of the turtle.
  - Use only for collecting data (identifying species, measuring shell, recording any flipper tag details).

### When you see hatchlings emerging from a nest:

- Be careful not to touch or disturb them. Wherever possible, allow them to make their own way to the sea.
- Try to remove any obstacles (e.g. plastic, nets) or predators between the hatchlings and the sea.
- Again, keep flashlights to the barest minimum.

### DO NOT:

- Shine a flashlight in front of a turtle's face or directly at hatchlings.
- Touch a turtle's head. They have strong jaws and can harm you!
- Take pictures using a flash – this can disorient the turtle and may disrupt her returning to sea.
- Touch the eggs or move them.
- Handle, needlessly touch or sit on a turtle. You can injure her and force her to leave without finishing her nesting.
- Get in the way of a turtle when she is leaving to enter the sea. Always stay behind her.
- Pick up or place hatchlings directly in the sea.

The key is to **be quiet** and **stay behind the turtle** at all times, so the turtle doesn't know you are there!



**Do not** make any noise



**Do not** take pictures using a flash



**Do not** shine a flashlight in a turtle's face



**Do not** touch a turtle's head



**Do not** stay close to the turtle



**Do not** touch eggs or move them



**Do not** pick up or place hatchlings in the sea

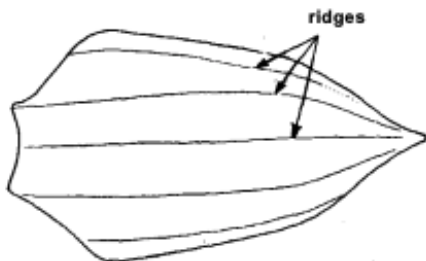
# 1. SPECIES IDENTIFICATION

**Common name: LEATHERBACK | Scientific name: Dermochelys coriacea**

**IUCN Red List status: Vulnerable**

## Identification:

<b>Distribution</b>	All oceans, sub-arctic to tropical
<b>Colour*</b> <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Dark grey or black, with white or pale spots
<b>Length</b>	140 to 180 cm
<b>Weight</b>	300 to 600 kg
<b>Period of nesting</b>	Night
<b>Clutch size</b>	80 – 100 eggs
<b>Incubation period</b>	Around 60 days
<b>Clutch per season</b>	4 – 9
<b>Period between nesting</b>	9 – 10 days
<b>Period between migrations</b>	2 – 4 years
<b>Carapace</b> Leathery skin with dorsal ridges. Without hard shell.	<b>Head</b> Two beak cusps.



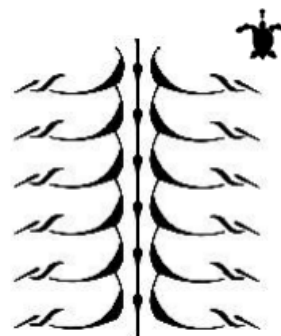
<http://www.fao.org/3/to244e/to244e00.htm>



<http://www.fao.org/3/to244e/to244e00.htm>

### Tracks

- Symmetrical flipper marks ("breast stroke")
- Deep and broad track
- Usually well-defined tail-drag mark
- Prominent markings from front flippers at outside edges of track.
- Total track width: 150-230 cm



Florida Fish and Wildlife Conservation Commission.  
Sea Turtle Conservation Guidelines.

## LEATHERBACK



Photo credit: EJF



Photo credit: EJF



Photo credit: Ken Clifton. (CC BY-NC 2.0)

**Common name: GREEN TURTLE | Scientific name: Chelonia mydas**

**IUCN Red List status: Endangered**

**Identification:**

<b>Distribution</b>	All sub-tropical and tropical seas
<b>Colour*</b> <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Variable in adults (light to very dark green, almost black). Brown with radiating streaks in juveniles.
<b>Length</b>	80 – 120 cm
<b>Weight</b>	Up to 230 kg
<b>Period of nesting</b>	Night
<b>Clutch size</b>	110 - 130 eggs
<b>Incubation period</b>	Around 60 days
<b>Clutch per season</b>	2 - 5
<b>Period between nesting</b>	10 – 14 days
<b>Period between migrations</b>	2 - 4 years

**Carapace**  
High domed carapace. Broadly oval in shape. Not serrated.

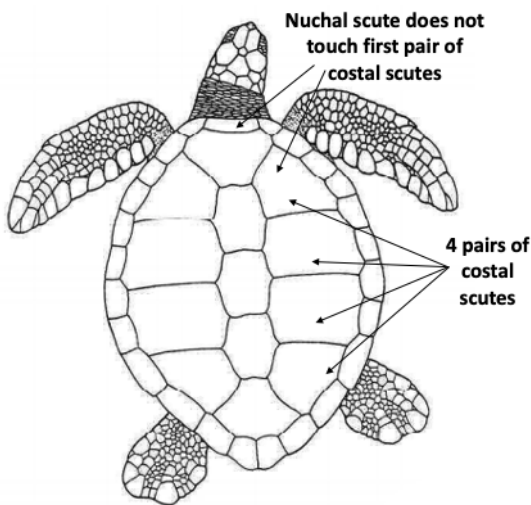


Image adapted from IUCN/SSC Marine Turtle Specialist Group

**Head**  
Distinguished from most other species by single pair of prefrontal scales.

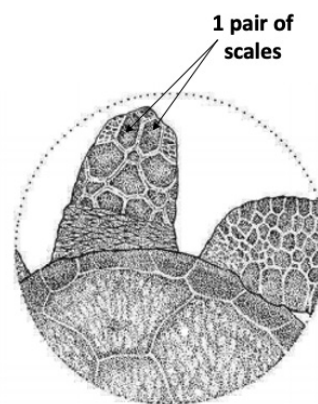
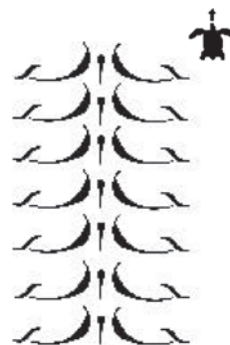


Image adapted from IUCN/SSC Marine Turtle Specialist Group

**Tracks**

- Symmetrical flipper marks (“breast stroke”)
- Straight and well-defined tail-drag mark either as solid or broken line.
- Deeply cut, regular markings from front flippers at outside edges of track.
- Total track width: typically 100-130 cm but can vary.



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## GREEN TURTLE



Photo credit: Florida Fish and Wildlife. (CC BY-ND 2.0)



Photo credit: US Fish and Wildlife Service



Photo credit: Bernard Dupont. (CC BY-SA 2.0)

**Identification:**

<b>Distribution</b>	Circumglobal, tropical and sub-tropical
<b>Colour *</b> <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Mid to dark olive green, olive-grey or olive-yellow
<b>Length</b>	60 – 70 cm
<b>Weight</b>	Up to 70 kg
<b>Period of nesting</b>	Night
<b>Clutch size</b>	105 -120 eggs
<b>Clutch per season</b>	1 - 3
<b>Period between nesting</b>	20 - 28 days
<b>Period between migrations</b>	1 - 3 years
<b>Carapace</b> 5 - 9 pairs of costal scutes (usually 6 – 8). Smooth carapace, nearly round.	<b>Head</b> Triangular from above. 2 pairs of prefrontal scales.

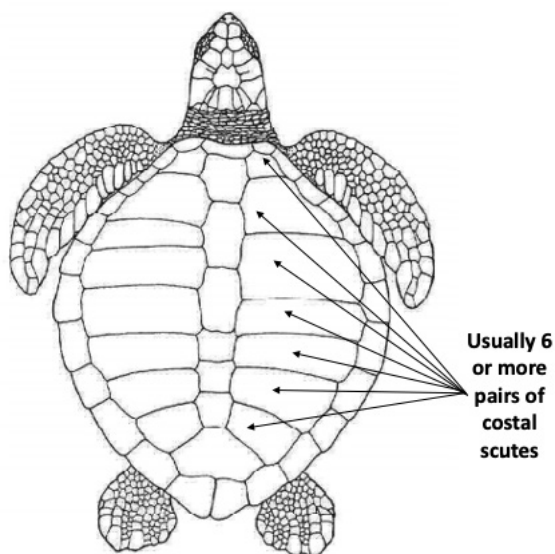


Image adapted from IUCN/SSC Marine Turtle Specialist Group

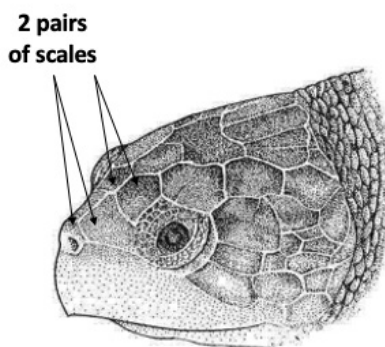


Image adapted from IUCN/SSC Marine Turtle Specialist Group

**Tracks**

- Very light, may be quickly obliterated by wind
- Alternating (asymmetrical) comma-shaped flipper marks
- Tail drag mark lacking or inconspicuous
- Track width: 70-80 cm



Florida Fish and Wildlife Conservation Commission. *Sea Turtle Conservation Guidelines.*

## OLIVE RIDLEY



Photo credit: EJP



Photo credit: Panegyrics of Granovetter. (CC BY-SA 2.0)



Photo credit: Michael W Klotz. [www.TheBirdBlogger.com](http://www.TheBirdBlogger.com) (CC BY-NC 2.0)



**IUCN Red List status: Critically endangered**

**Identification:**

<b>Distribution</b>	All oceans, tropical waters
<b>Colour*</b> <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Olive green or brown, variegated with brown/black markings
<b>Length</b>	75 - 90 cm
<b>Weight</b>	Up to 80 kg
<b>Period of nesting</b>	Night
<b>Clutch size</b>	110 - 180 eggs
<b>Incubation period</b>	Around 60 days
<b>Clutches of eggs per season</b>	2 - 4
<b>Period between nesting</b>	15 days
<b>Period between migrations</b>	2 - 3 years

**Carapace**

Oval, strongly serrated posterior margin.  
Thick overlapping scutes. Four pairs of costal scutes.

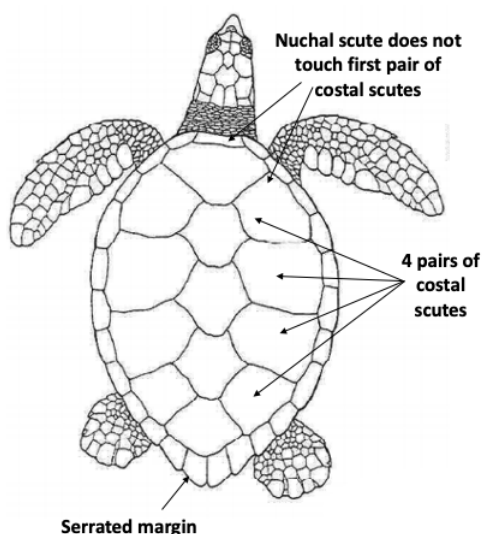


Image adapted from IUCN/SSC Marine Turtle Specialist Group

**Head**

Relatively narrow with bird-like beak.  
Two pairs of prefrontal scales.

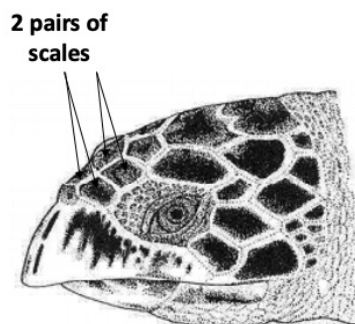


Image adapted from IUCN/SSC Marine Turtle Specialist Group

**Tracks**

- Shallow, with alternating (asymmetrical) marks made by forelimbs.
- Tail-drag mark may be present as a wavy mark or absent.
- Frequently nest under overhanging vegetation and often wander extensively before nesting.
- Track width: typically 70 -85 cm

*Note: nests and tracks are very similar to Olive Ridley track but the species prefer different beach types and rarely nest together. Individual flipper prints are generally deeper for Hawksbills.*



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Sea Turtle Conservation Guidelines

## HAWKSBILL



Photo credit: EJF



Photo credit: Gerwin Sturm. (CC BY-SA 2.0)



Credit: USAID Biodiversity & Forestry.  
Photo by Jerry Bauer, USFS. (CC BY-NC 2.0)

**Identification:**

<b>Distribution</b>	Circumglobal, tropical and subtropical waters
<b>Colour*</b> <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Reddish brown
<b>Length</b>	80 - 105 cm
<b>Weight</b>	Up to 160 -180kg
<b>Period of nesting</b>	Night
<b>Clutch size</b>	100 - 130 eggs
<b>Incubation period</b>	Around 60 days
<b>Clutches of eggs per season</b>	4 - 7
<b>Period between nesting</b>	14 days
<b>Period between migrations</b>	2 - 3 years

**Carapace**  
Five or more pairs of costal scutes. Moderately broad carapace but not circular.

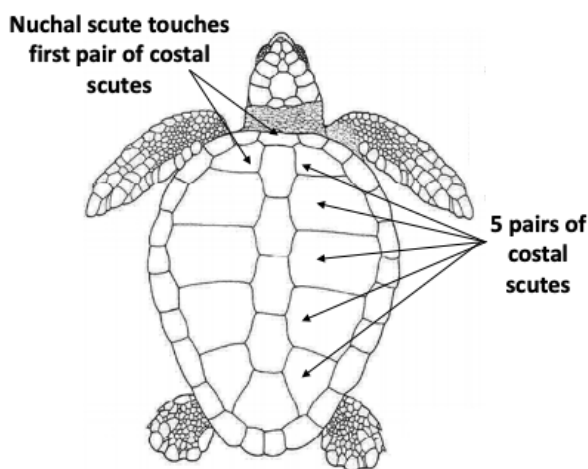


Image adapted from IUCN/SSC Marine Turtle Specialist Group

**Head**  
Large and broadly triangular in shape. Two pairs of prefrontal scales.

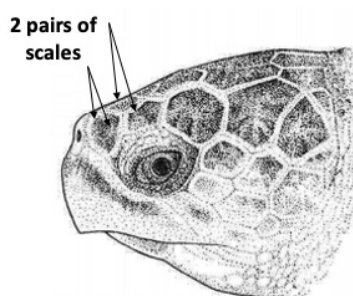


Image adapted from IUCN/SSC Marine Turtle Specialist Group

**Tracks**

- Alternating (asymmetrical) marks made by forelimbs.
- Wavy and smoothed track centre
- No straight or well-defined tail-drag mark
- Track width: typically 70 - 90 cm



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## LOGGERHEAD



Photo credit: EJF



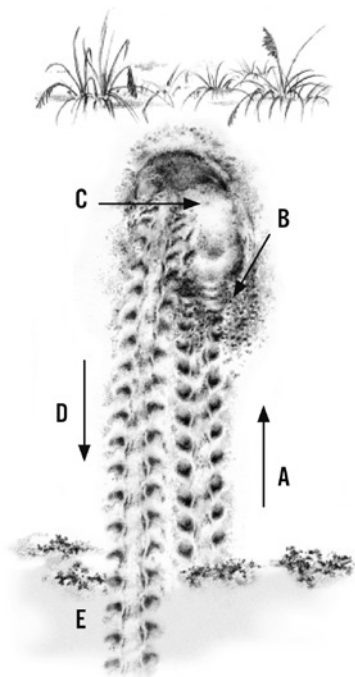
Photo credit: Jolene Thompson. (CC BY 2.0)



Photo credit: GTM NERR. (CC BY-NC-SA 2.0)

## 2. CRAWL IDENTIFICATION

### Nesting crawl



Source - Image adapted from: IUCN/SSC Marine Turtle Specialist Group.  
*Research and Management Techniques for the Conservation of Sea Turtles.*

#### Stages of a successful nest

- A. Emerging crawl
- B. Sand misted/thrown back over the emerging track
- C. Secondary body pit
- D. Returning crawl
- E. High tide line

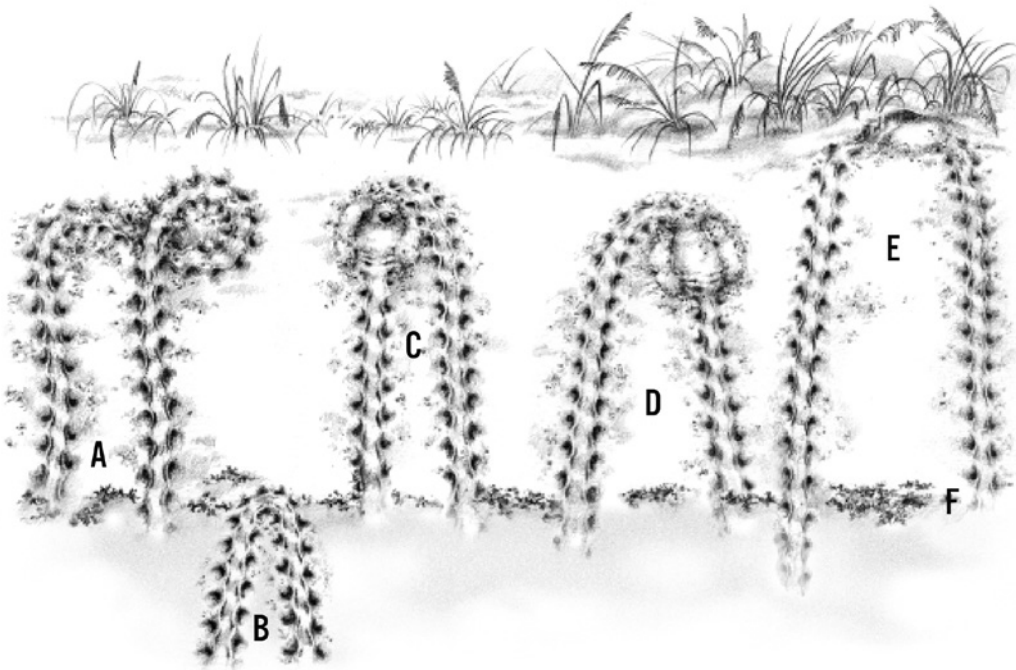
#### Nesting field signs - nesting is indicated by evidence of:

- Front flippers throwing sand back over emerging track
- A nest mound and an escarpment (rim around the nest mound)
- Primary body pit having been filled in or covered with sand from the secondary body pit



Photo credit: FWC Fish and Wildlife Research Institute. (CC BY-NC-ND 2.0)

## False crawl



Source - Image adapted from: IUCN/SSC Marine Turtle Specialist Group. *Research and Management Techniques for the Conservation of Sea Turtles*.

### False crawls

- A. Extensive wandering with no body pitting or digging
- B. U-shaped crawl to high tide line
- C. Considerable sand disturbance, evidence of body pitting and digging with a smooth-walled egg chamber but no evidence of covering
- D. Considerable sand disturbance, evidence of body pitting and digging but no evidence of covering
- E. Similar relative lengths of emerging and returning crawls
- F. High tide line

### Signs of a false crawl (non-nesting emergence):

- Very little or no sand disturbed
- U-shaped or arc shape crawl with no digging
- Sand disturbed from digging and evidence of an abandoned body pit but no covering
- Considerable sand disturbed from digging effort but with a smooth-walled or abandoned/open egg cavity in the centre of a pit – usually deeper than secondary body pit of successful nest

### 3. DATA RECORDING

Data should be recorded using the online survey form via the EJF mobile app. Manual data sheets may also be completed.

#### Taking shell measurements

- The curved carapace width (CCW) measurement should be taken across the widest part of the carapace, holding the tape measure along the surface of the carapace.
- The curved carapace length (CCL) measurement should be made along the midline of the carapace, holding the tape measure along the surface of the carapace.



Measuring CCW – Curved Carapace Width | Photo credit: Bruno Amir



Measuring CCL – Curved Carapace Length | Photo credit: EJF

## Tagged turtles

If a tagged turtle is encountered during monitoring activities, record the letters and number on the tag.



Photo credit: ReefDoctor. Darwin Initiative. (CC BY-NC-SA 2.0)



## GLOSSARY

<b>Body pit:</b>	The depression dug by the female turtle during nesting.
<b>Carapace:</b>	A bony shield or shell covering all or part of the dorsal (top) side of the turtle.
<b>Clutch:</b>	A group of eggs laid at the same time. Clutch size refers to the number of eggs produced by a turtle/deposited in a nest at one time.
<b>Crawl:</b>	Tracks and other signs left on a beach by a sea turtle.
<b>Egg cavity (chamber):</b>	The hole dug by the rear flippers of a nesting turtle into which the turtle lays her eggs.
<b>False crawl:</b>	The track left by a sea turtle that has ascended a beach but returned to the sea without laying eggs.
<b>Hatchling:</b>	A turtle that has recently emerged from the egg.
<b>Incidental capture:</b>	The unintended capture of non-target species during fishing activity.
<b>Nesting population:</b>	A group of adult female turtles that tends to nest in a specific area.
<b>Nesting:</b>	The process of depositing eggs in a nest cavity on a beach. This is often used interchangeably with breeding.
<b>Plastron:</b>	The shell covering the ventral (under) side of the turtle.
<b>Prefrontal scales:</b>	Scales on a turtle's head behind the nose and in front of the eyes that can be used to help distinguish sea turtle species.
<b>Primary body pit:</b>	The excavation made by a turtle on the beach just before digging the egg cavity.
<b>Scutes:</b>	Bony plates covering the carapace and plastron, except in the Leatherback turtle.
<b>Secondary body pit:</b>	The excavation made by a nesting turtle using the front flippers following the laying of eggs. The sand dug from the secondary body pit covers the primary body pit and egg cavity.

## REFERENCES

- Anon. (undated). 'Sea Turtle Crawls', *Sea Turtle Exploration*.  
<https://seaturtleexploration.com/explore-and-learn/sea-turtle-web-lessons/crawls/>. Accessed 30.10.20.
- Department of Parks and Wildlife (2015). *Turtle Monitoring Field Guide*. Ningaloo Turtle Program. Seventh Edition.
- Eckert, K. L., Bjorndal, K. A., Abreu-Grobois, F. A. and Donnelly, M. (Eds.) (1999). *Research and Management Techniques for the Conservation of Sea Turtles*. IUCN/SSC Marine Turtle Specialist Group Publication No. 4. Washington, DC: 235 pp.
- Florida Fish and Wildlife Conservation Commission (undated). *Nesting Beach Surveys: Crawl Identification*.
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- Sea Turtle Conservancy (undated). *Sea Turtle Conservation Guide*.  
<https://www.conserveturtles.org/Secure/certificates/SeaTurtleConservationGuide.pdf>

**APPENDIX 1** | **Worksheet for manual data collection on sea turtle activity**  
**(nesting, poaching and fishing by-catch)**

TURTLE ACTIVITY - RECORD SHEET											
Date	Team ID	Survey Time		Activity			Location	Shell (Carapace) Measurements		Turtle Nest	
		Start	Finish	Species	Nesting event	Fate of turtle	(GPS points)	CCL (cm)	CCW (cm)	Intact	Raided
Comments											
Comments											
Comments											
Comments											
Comments											

SPECIES

LB = Leatherback  
 OL = Olive Ridley  
 GT = Green Turtle  
 HB = Hawksbill  
 LH = Loggerhead  
 NO = Not Known

NESTING EVENT

LN = Likely Nest (when you haven't seen the turtle nesting but you think it is a nest)  
 CN = Confirmed Nest (when you have actually seen the turtle nesting)  
 FC = False Crawl (tracks of the turtle when it comes onto the beach and returns to the sea without nesting)  
 NO = Not Known

FATE OF TURTLE

RS = Turtle returned to sea without observer seeing turtle  
 RSE = Observer saw the turtle during nesting/as it returned to the sea  
 PO = Turtled poached and killed  
 APO = Turtle poached but released  
 BC = By-catch (fishing net)  
 BCO = By-catch but released

SHELL MEASUREMENTS

CCL = Curved Carapace Length  
 CCW = Curved Carapace Width

COMMENTS

e.g. Turtle has a tag with No. MB747

## APPENDIX 2 | Survey for capturing data electronically using the Collect mobile app

	Question	Responses	Question type
<b>General</b>			
1	Date	Enter date in format DD/MM/YYYY	Date
2	Time	Enter time in 24 hour format	Time
3	Community	Select community	Single choice
4	Staff Identification	Select staff member	Single choice
5	Location	Fetch current location	Location
6	Observation Type	<ul style="list-style-type: none"> <li>Nesting</li> <li>Poaching</li> <li>By-catch (fishing net)</li> </ul>	Select one or multiple options
7	Species Observed	<ul style="list-style-type: none"> <li>Olive Ridley</li> <li>Green Turtle</li> <li>Leatherback</li> <li>Loggerhead</li> <li>Hawksbill</li> <li>Not known</li> </ul>	Select one option
<b>Nesting</b>			
8	Nesting Behaviour	<ul style="list-style-type: none"> <li>Confirmed nest</li> <li>Likely nest</li> <li>False crawl</li> <li>Not known</li> </ul>	Select one option
9	Fate of Nesting Turtle	<ul style="list-style-type: none"> <li>Turtle returned to sea without being seen by observer (RS)</li> <li>Observer saw turtle as it nested/ returned to sea (RSE)</li> <li>Turtle poached and killed (PO)</li> <li>Turtle captured but released (APO)</li> </ul>	Select one or multiple options
10	Hatchlings Observed	Enter number	Number
<b>Poaching</b>			
11	Fate of Poached Turtle	<ul style="list-style-type: none"> <li>Turtle killed</li> <li>Turtle released</li> <li>Nest raided for eggs (humans, dogs)</li> <li>Hatchlings captured or attacked</li> </ul>	Select one or multiple options
<b>By-catch</b>			
12	Fate of Turtle Captured in Fishing Net (By-catch)	<ul style="list-style-type: none"> <li>Turtle killed</li> <li>Turtle released</li> <li>Not known</li> </ul>	Select one option
<b>Evidence/verification</b>			
13	Observation Evidence – Image	Upload photo via app	Image geotag
14	Species ID – Image 1	Upload photo via app	Image
15	Species ID – Image 2	Upload photo via app	Image
16	Observation Evidence –Video	Upload video via app	Video
<b>Measurements</b>			
17	Measurement – CCL	Enter measurement	Number
18	Measurement – CCW	Enter measurement	Number
<b>Comments</b>			
19	Comments	Record additional comments – e.g. turtle has a tag with No. MB747	Audio

**Thank you to Arcadia, The Northwick Trust and the Rufford Foundation for their generous support for EJF's turtle conservation work in West Africa.**

The contents of this publication are the sole responsibility of EJF.



Photo credit: EJF