

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



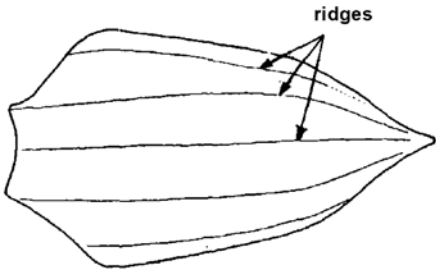
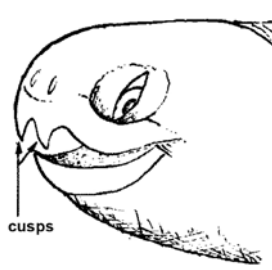
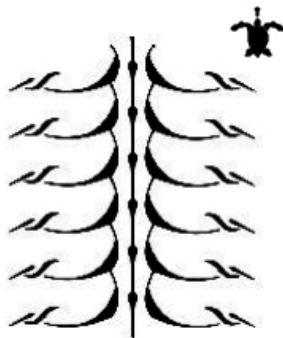
Do not pick up or place hatchlings in the sea

1. SPECIES IDENTIFICATION

Common name: LEATHERBACK | Scientific name: Dermochelys coriacea

IUCN Red List status: Vulnerable

Identification:

Distribution	All oceans, sub-arctic to tropical
Colour* <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Dark grey or black, with white or pale spots
Length	140 to 180 cm
Weight	300 to 600 kg
Period of nesting	Night
Clutch size	80 – 100 eggs
Incubation period	Around 60 days
Clutch per season	4 – 9
Period between nesting	9 – 10 days
Period between migrations	2 – 4 years
Carapace Leathery skin with dorsal ridges. Without hard shell. <div data-bbox="134 1164 571 1433">  <p>A line drawing of a leatherback carapace, showing a series of horizontal ridges running from the front to the back. Arrows point to these ridges with the label 'ridges'.</p> </div> <div data-bbox="106 1473 478 1500"> http://www.fao.org/3/to244e/to244e00.htm </div>	Head Two beak cusps. <div data-bbox="845 1164 1117 1433">  <p>A line drawing of a leatherback head in profile, showing the eye and the mouth. The mouth has two distinct points labeled 'cusps'.</p> </div> <div data-bbox="802 1473 1177 1500"> http://www.fao.org/3/to244e/to244e00.htm </div>
Tracks <ul style="list-style-type: none"> 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 	<div data-bbox="810 1585 1093 1921">  <p>A diagram showing a series of symmetrical flipper marks on either side of a central vertical line, representing the tail-drag mark. A small turtle icon is at the top right.</p> </div> <div data-bbox="802 1982 1241 2033"> <p>Florida Fish and Wildlife Conservation Commission. Sea Turtle Conservation Guidelines.</p> </div>

LEATHERBACK



Photo credit: EJF



Photo credit: EJF

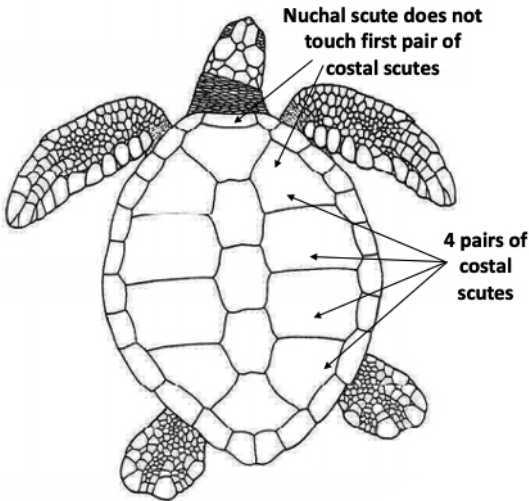
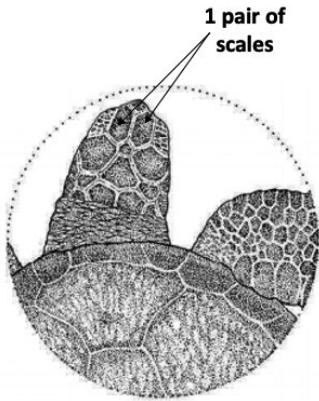
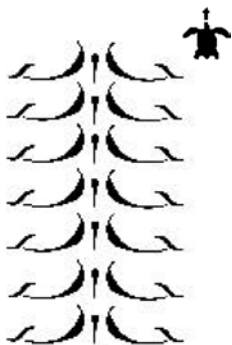


Photo credit: Ken Clifton. (CC BY-NC 2.0)

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

IUCN Red List status: **Endangered**

Identification:

Distribution	All sub-tropical and tropical seas
Colour* <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.
Length	80 – 120 cm
Weight	Up to 230 kg
Period of nesting	Night
Clutch size	110 - 130 eggs
Incubation period	Around 60 days
Clutch per season	2 - 5
Period between nesting	10 – 14 days
Period between migrations	2 - 4 years
Carapace High domed carapace. Broadly oval in shape. Not serrated.	Head Distinguished from most other species by single pair of prefrontal scales.
	
Image adapted from IUCN/SSC Marine Turtle Specialist Group	Image adapted from IUCN/SSC Marine Turtle Specialist Group
Tracks <ul style="list-style-type: none"> 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. 	 <p>Florida Fish and Wildlife Conservation Commission. Sea Turtle Conservation Guidelines.</p>

GREEN TURTLE



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



Photo credit: US Fish and Wildlife Service

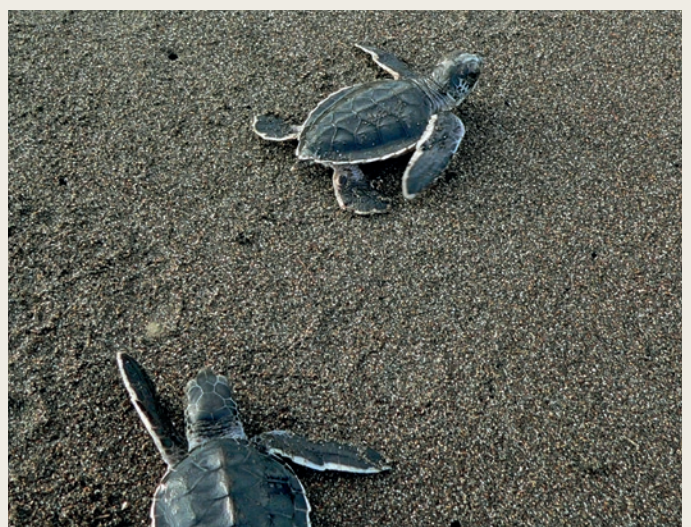
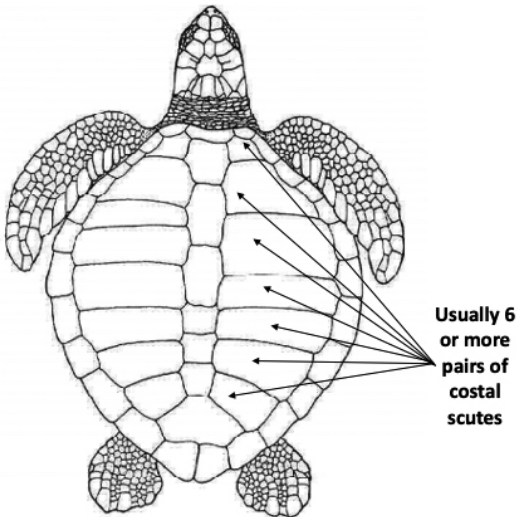
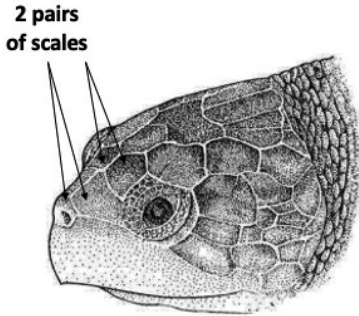
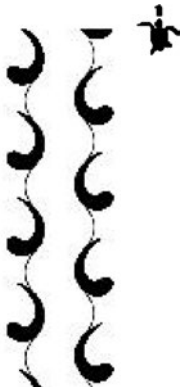


Photo credit: Bernard Dupont. (CC BY-SA 2.0)

Common name: OLIVE RIDLEY | Scientific name: *Lepidochelys olivacea*

IUCN Red List status: **Vulnerable**

Identification:

Distribution	Circumglobal, tropical and sub-tropical
Colour * <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Mid to dark olive green, olive-grey or olive-yellow
Length	60 – 70 cm
Weight	Up to 70 kg
Period of nesting	Night
Clutch size	105 -120 eggs
Clutch per season	1 - 3
Period between nesting	20 - 28 days
Period between migrations	1 - 3 years
Carapace 5 - 9 pairs of costal scutes (usually 6 – 8). Smooth carapace, nearly round.	Head 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 <ul style="list-style-type: none"> • 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)

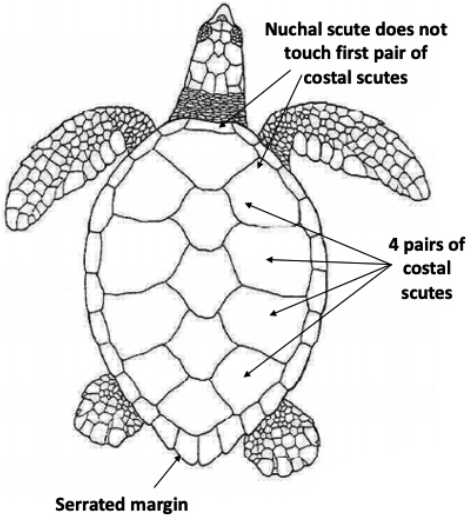
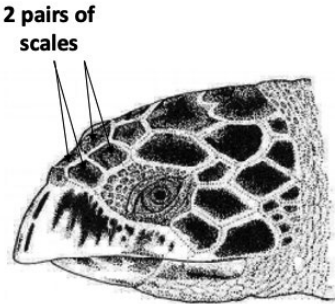



Photo credit: Michael W Klotz. www.TheBirdBlogger.com (CC BY-NC 2.0)

Common name: HAWKSBILL | Scientific name: *Eretmochelys imbricata*

IUCN Red List status: **Critically endangered**

Identification:

Distribution	All oceans, tropical waters
Colour* <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Olive green or brown, variegated with brown/black markings
Length	75 – 90 cm
Weight	Up to 80 kg
Period of nesting	Night
Clutch size	110 - 180 eggs
Incubation period	Around 60 days
Clutches of eggs per season	2 - 4
Period between nesting	15 days
Period between migrations	2 - 3 years
Carapace Oval, strongly serrated posterior margin. Thick overlapping scutes. Four pairs of costal scutes.	Head Relatively narrow with bird-like beak. Two pairs of prefrontal scales.
	
Image adapted from IUCN/SSC Marine Turtle Specialist Group	Image adapted from IUCN/SSC Marine Turtle Specialist Group
Tracks <ul style="list-style-type: none"> • 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 <p><i>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.</i></p>	 <p>Florida Fish and Wildlife Conservation Commission. Sea Turtle Conservation Guidelines</p>

HAWKSBILL



Photo credit: EJP



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

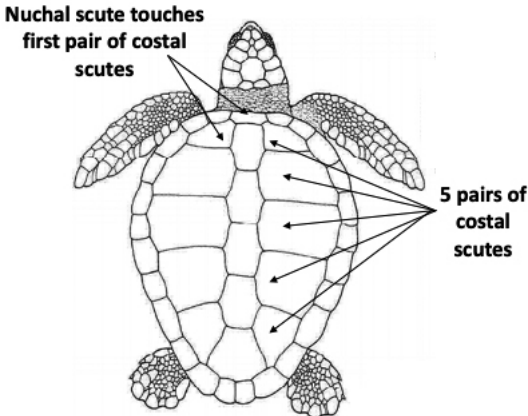
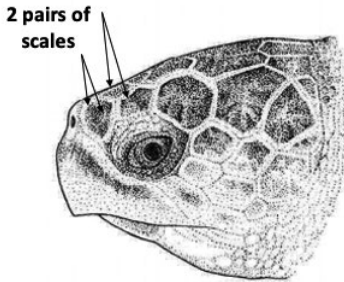
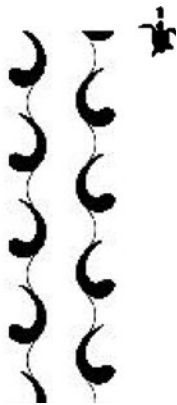


Credit: USAID Biodiversity & Forestry.
Photo by Jerry Bauer, USFS. (CC BY-NC 2.0)

Common name: **LOGGERHEAD** | Scientific name: *Caretta caretta*

IUCN Red List status: **Vulnerable**

Identification:

Distribution	Circumglobal, tropical and subtropical waters
Colour* <i>*Colours may differ from described, particularly in hatchlings and juveniles.</i>	Reddish brown
Length	80 - 105 cm
Weight	Up to 160 -180kg
Period of nesting	Night
Clutch size	100 - 130 eggs
Incubation period	Around 60 days
Clutches of eggs per season	4 - 7
Period between nesting	14 days
Period between migrations	2 - 3 years
Carapace Five or more pairs of costal scutes. Moderately broad carapace but not circular.	Head Large and broadly triangular in shape. Two pairs of prefrontal scales.
	
Image adapted from IUCN/SSC Marine Turtle Specialist Group	Image adapted from IUCN/SSC Marine Turtle Specialist Group
Tracks <ul style="list-style-type: none"> 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 	
	Florida Fish and Wildlife Conservation Commission. Sea Turtle Conservation Guidelines

LOGGERHEAD



Photo credit: EJF



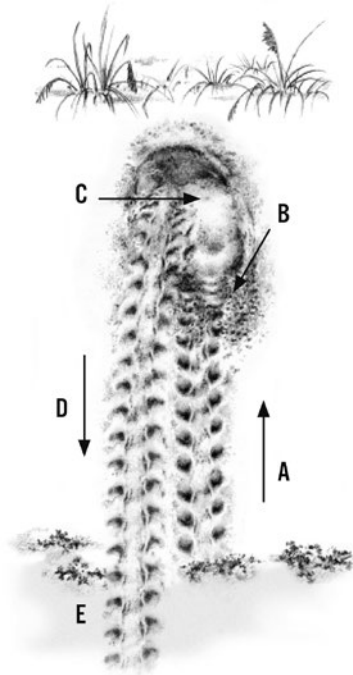
Photo credit: Jolene Thompson. (CC BY 2.0)



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

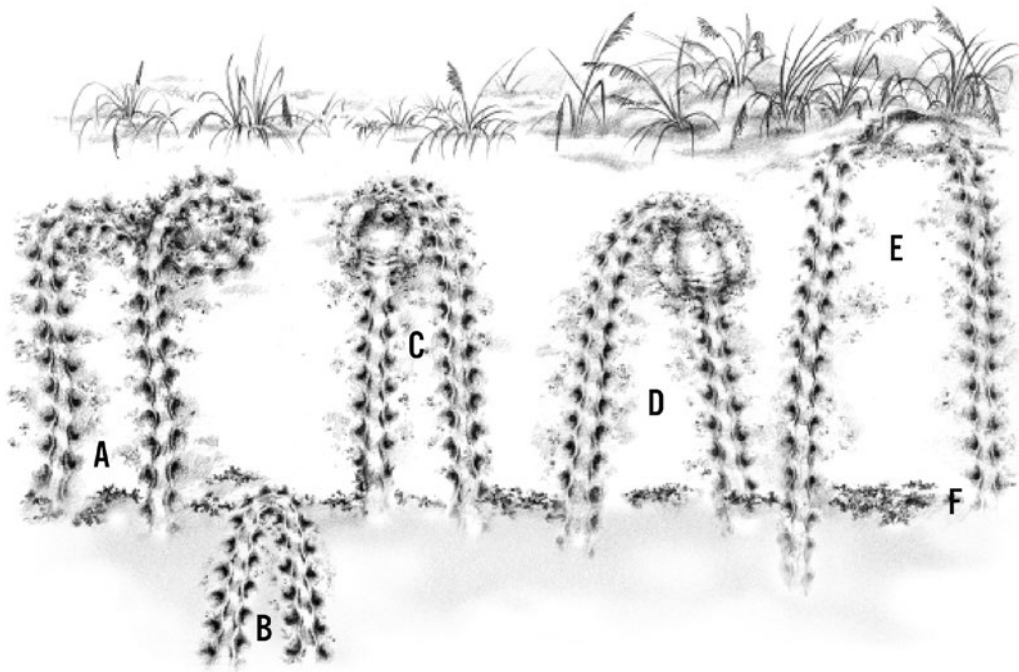
Nesting field signs – nesting is indicated by evidence of:

- 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 EJJ 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: EJJ

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

Body pit:	The depression dug by the female turtle during nesting.
Carapace:	A bony shield or shell covering all or part of the dorsal (top) side of the turtle.
Clutch:	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.
Crawl:	Tracks and other signs left on a beach by a sea turtle.
Egg cavity (chamber):	The hole dug by the rear flippers of a nesting turtle into which the turtle lays her eggs.
False crawl:	The track left by a sea turtle that has ascended a beach but returned to the sea without laying eggs.
Hatchling:	A turtle that has recently emerged from the egg.
Incidental capture:	The unintended capture of non-target species during fishing activity.
Nesting population:	A group of adult female turtles that tends to nest in a specific area.
Nesting:	The process of depositing eggs in a nest cavity on a beach. This is often used interchangeably with breeding.
Plastron:	The shell covering the ventral (under) side of the turtle.
Prefrontal scales:	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.
Primary body pit:	The excavation made by a turtle on the beach just before digging the egg cavity.
Scutes:	Bony plates covering the carapace and plastron, except in the Leatherback turtle.
Secondary body pit:	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*.
- Márquez M., R. (1990). 'FAO species catalogue. Vol.11: Sea turtles of the world. An annotated and illustrated catalogue of sea turtle species known to date'. *FAO Fisheries Synopsis* No. 125, Vol. 11. Rome, FAO. 81 pp.
- 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 (GPS points)	Shell (Carapace) Measurements		Turtle Nest	
		Start	Finish	Species	Nesting event	Fate of turtle		CCL (cm)	CCW (cm)	Intact	Raided
Comments											
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
General			
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"> Nesting Poaching By-catch (fishing net) 	Select one or multiple options
7	Species Observed	<ul style="list-style-type: none"> Olive Ridley Green Turtle Leatherback Loggerhead Hawksbill Not known 	Select one option
Nesting			
8	Nesting Behaviour	<ul style="list-style-type: none"> Confirmed nest Likely nest False crawl Not known 	Select one option
9	Fate of Nesting Turtle	<ul style="list-style-type: none"> Turtle returned to sea without being seen by observer (RS) Observer saw turtle as it nested/ returned to sea (RSE) Turtle poached and killed (PO) Turtle captured but released (APO) 	Select one or multiple options
10	Hatchlings Observed	Enter number	Number
Poaching			
11	Fate of Poached Turtle	<ul style="list-style-type: none"> Turtle killed Turtle released Nest raided for eggs (humans, dogs) Hatchlings captured or attacked 	Select one or multiple options
By-catch			
12	Fate of Turtle Captured in Fishing Net (By-catch)	<ul style="list-style-type: none"> Turtle killed Turtle released Not known 	Select one option
Evidence/verification			
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
Measurements			
17	Measurement – CCL	Enter measurement	Number
18	Measurement – CCW	Enter measurement	Number
Comments			
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 EJJ's turtle conservation work in West Africa.

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



Photo credit: EJJ