FUNDACIÓN CORCOVADO

PROGRAMA DE CONSERVACION DE TORTUGAS MARINAS

The Program

Turtle Biology

Methodology

Red de Conservación de Tortugas del Pacífico Sur

minae

COTORCO

COTDRO

The Program

Contents:

- Who are we?
- What do we do?
- How are we organized?
- Role of the volunteer
- Study area
- Accommodation
- Safety and security
- Work plan
- Fun stuff

Who are we?

We are a grass-roots non-profit organization that promotes the support of protected areas, environmental education, responsible tourism and the participation of local communities in the sustainable use of natural resources in the South Pacific of Costa Rica.

What do we do?




Sea Turtle Conservation

Environmental Education and Community Resources Management

Sustainable Tourism and Rural Community-based Tourism

Support of the Protected Areas of ACOSA

How are we organized?

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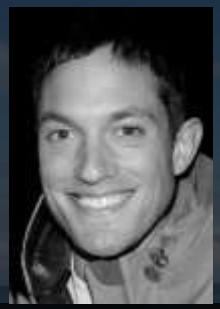
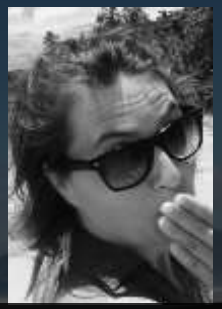
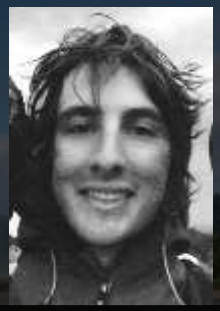
PROGRAMA DE CONSERVACION DE TORTUGAS MARINAS



Rob James
Program Director



Aida Garcia
Coordinator



Elías Fernández
Coordinator

Thomas Koblinger
Research Assistant

International Volunteers

Eva Horcajo
Research Assistant

Students and Visitors

COTORCO

How are we organized?

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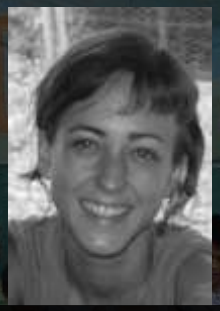
PROGRAMA DE EDUCACIÓN AMBIENTAL

Álvaro Amo
Program Director



Helena Pita
Coordinator

Gerard Garcia
Research Assistant

International Volunteers

Students and Visitors

How are we organized?

DRAKE BAY
BACKPACKERS

Marvin Alvarez
Hostel Manager

Kelly Reyes
Sales Coordinator

Hostel Family
Viriam y Eitan

International
Volunteers

Tourists!

How are we organized?

DRAKE BAY
BACKPACKERS

Responsible Tourism

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PROGRAMA DE CONSERVACION DE TORTUGAS MARINAS

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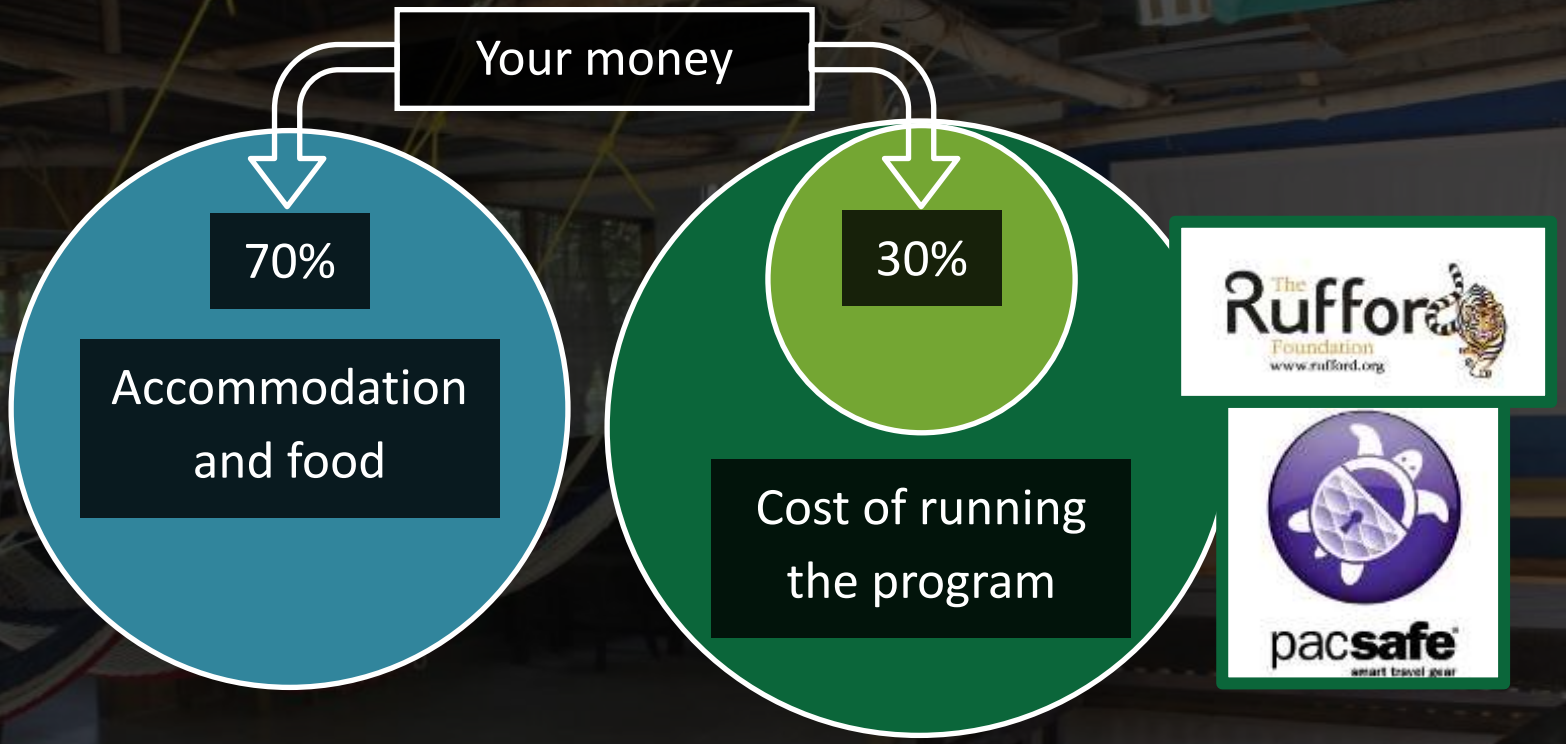
PROGRAMA DE EDUCACIÓN AMBIENTAL

The hostel is the headquarters of the turtle program, but it is also a non-profit hostel that raises funds for the Foundation's environmental programs through the promotion of responsible tourism.

Where does your money go?

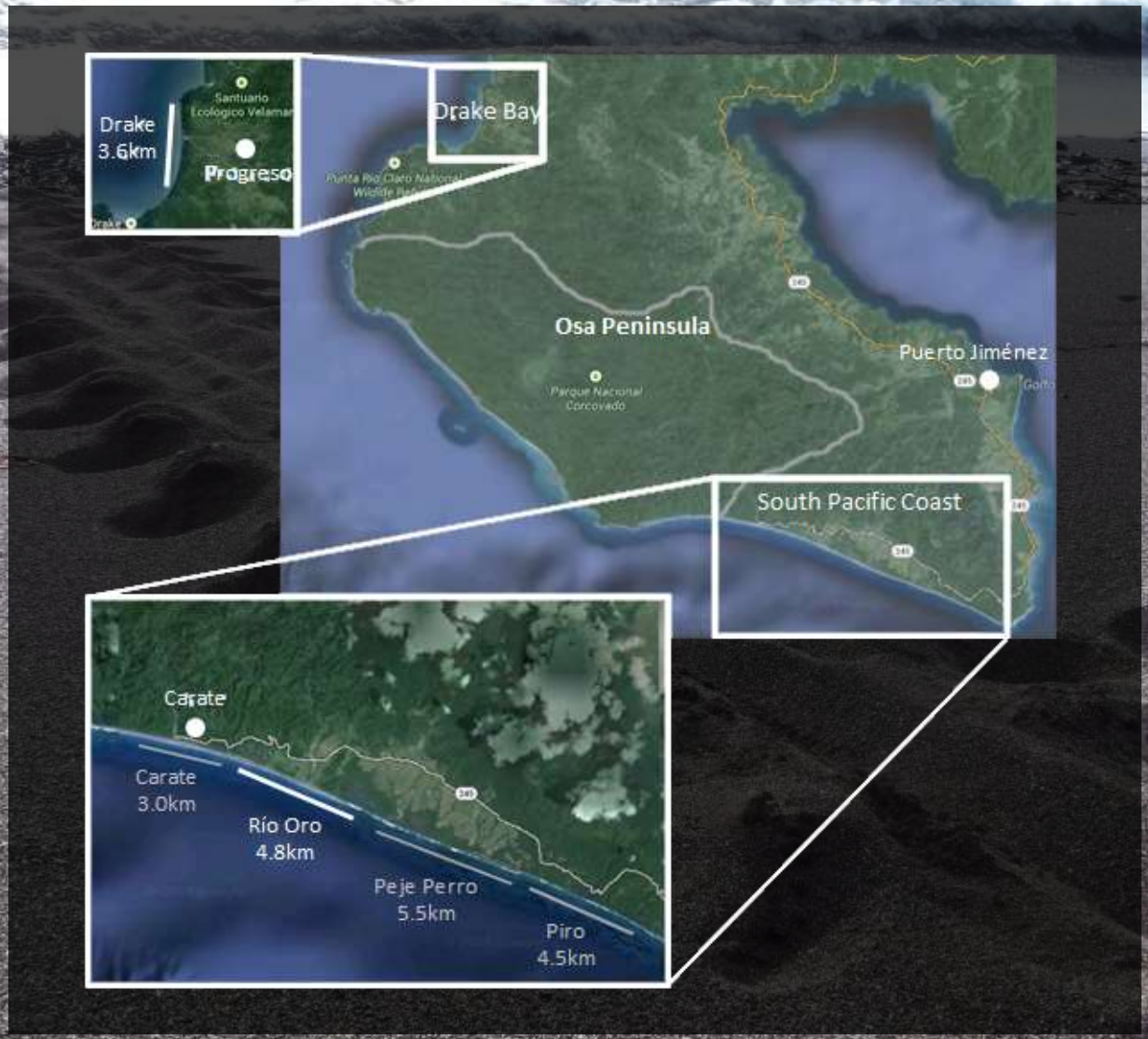


The Turtle Program does not make any profit from volunteers. Every year we have to find grants and donations to cover the cost of running the program. Anything left over has to be re-invested in the program.

Program objective

To promote the conservation and recuperation of the population of sea turtles that nests in the Osa Peninsula, through responsible tourism and the participation of local communities in the sustainable use of their natural resources.

Where do we work?



ACOTPRO – Drake Bay

In 2009, an association of conservationists was established in the village of El Progreso: ACOTPRO. Today, there are more that 10 members contracted as paid patrol leaders. ACOTPRO coordinates the night patrols and the hatchery work and has successfully managed a homestay network since 2010.

COTORCO – Río Oro

In 2009, an association of conservationists was established in the villages of Carate y Río Oro: COTORCO.

COTORCO coordinates the night patrols and the hatchery work in Carate and collaborates with our program and those of LAST, Frontier and Osa Conservation.

Role of the volunteer

You will help prevent the poaching of turtle eggs, record scientific data, and raise awareness within the local community as well as tourists regarding the importance of conserving natural resources. But most important of all is that you make the program possible. Thank you very much for coming! **You are a true eco-tourist!**

Role of the volunteer

Activities include:

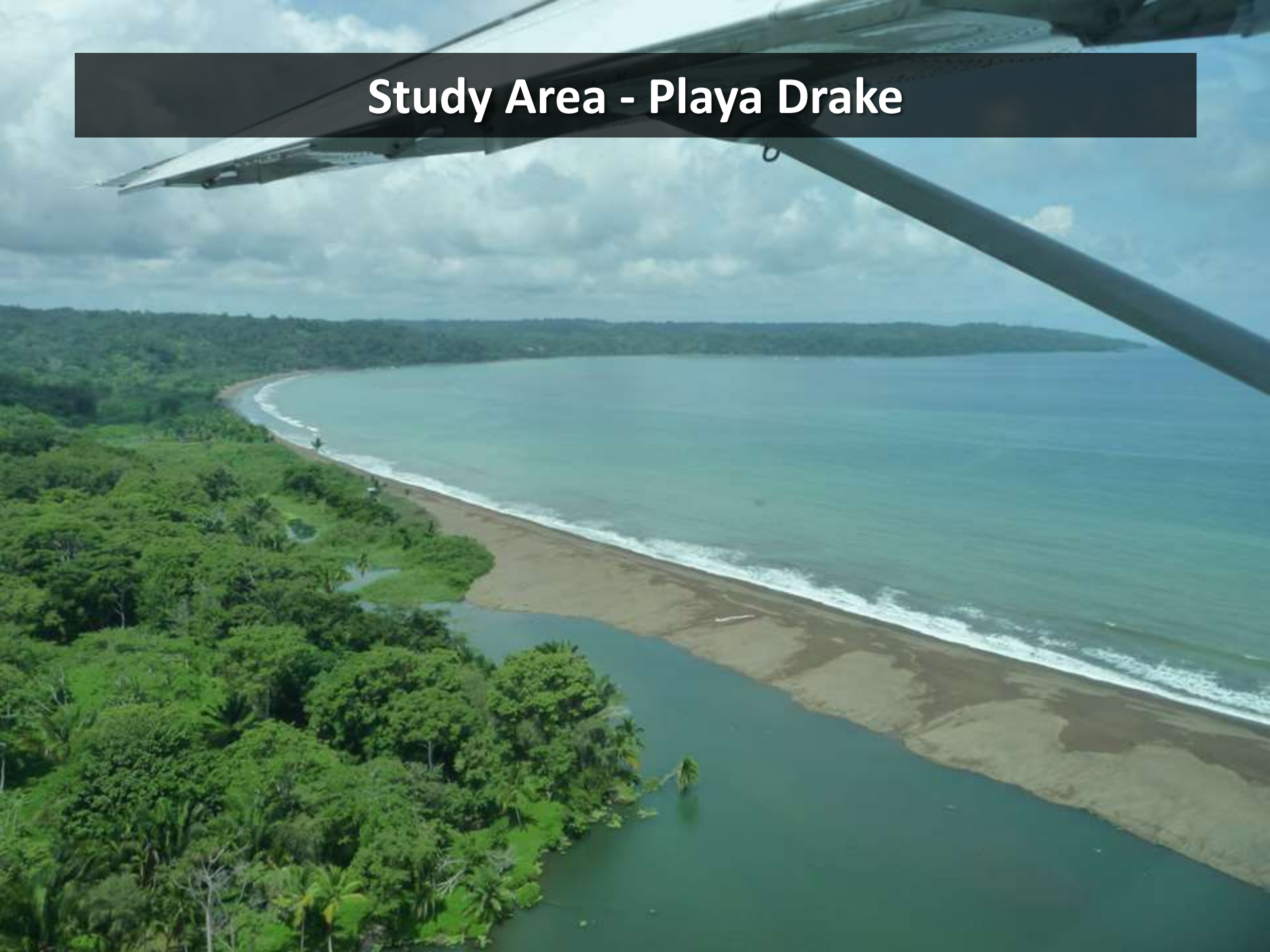
- Morning patrol (censo)
- Night patrols
- Relocation of nests
- Work shifts in the hatchery
- Liberation of hatchlings
- Excavation of hatched nests
- Environmental education
- Work at the hostel
- Work with community projects

Role of the volunteer

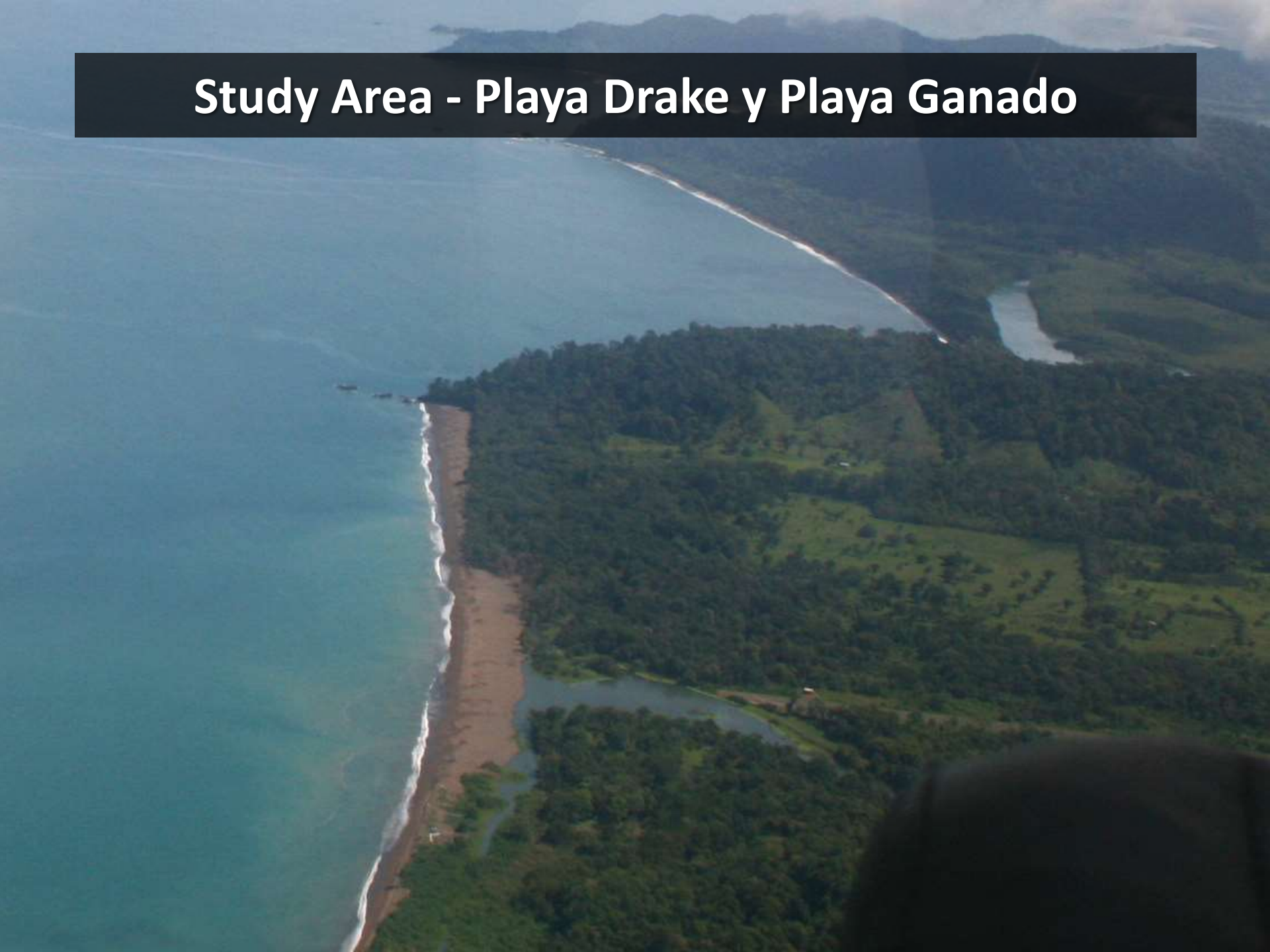
Expectations:

- Complete tasks as instructed with due diligence and care
- Make and learn from mistakes
- Respect the goals of the program and the community
- Participate actively in the creation of proposals and implementation of work planned by the group of volunteers

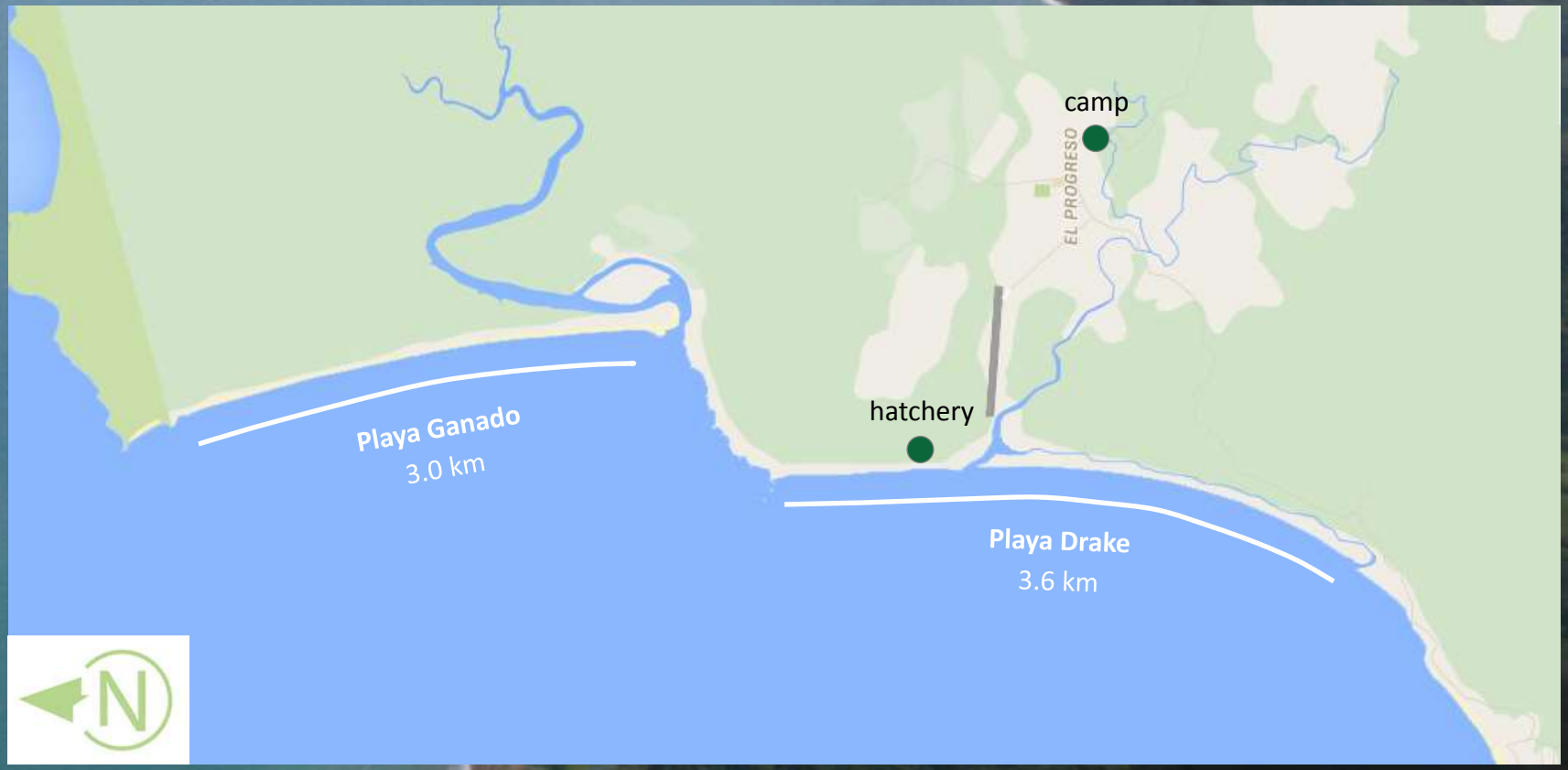
Study Area - Playa Drake



Study Area - Playa Drake y Playa Ganado



Study Area - Playa Drake y Playa Ganado



Study Area - Playa Río Oro

Study Area - Playa Río Oro

Accommodation in Drake - Hostel

- Generally all volunteers stay at the hostel for the first 3 nights
- Volunteers can request to remain there if there is space

Please:

- Keep the hostel facilities clean and tidy and your room smelling nice
- Respect and participate in the cleaning and cooking roster
- Respect your fellow volunteers and tourists by not making noise when they are sleeping

DRAKE BAY BACKPACKERS

Accommodation in Drake - Homestay

- We highly recommend that you stay in a homestay house – it is an unforgettable experience

Please:

- Keep your room and the bathroom clean and tidy
- Respect the host family and any house rules. Give them notice about your work schedule and always tell them where you are going if you are heading out. They will worry about you ☺

ACOTPRO

En esta casa protegemos a las tortugas marinas

Accommodation in Drake - Homestay

- Please ask for permission from your host family if you want to invite other volunteers into your homestay
- It is not permitted for members of the opposite sex to be in your room at any time whatsoever

ACOTPRO

En esta casa protegemos a las tortugas marinas

Accommodation in Drake - Homestay

Accommodation in Río Oro - Hacienda

- We rent a property called the Hacienda Río Oro, a 'glamping' style eco-lodge!

Please:

- Keep your tent and the bathroom clean and tidy
- Respect the house rules
- Respect your fellow volunteers by not making noise when they are sleeping
- It is not permitted to invite anyone into the Hacienda – only volunteers allowed

Safety and security

Wild Animals:

- Ants!
- Cockroaches
- Mosquitos
- Dogs
- Crocodiles

Please inform somebody immediately if you see:

- Scorpions
- Snakes
- Drop Bears

Safety and security

Safety on the beach and runway:

- Runway
- Lagoon
- Trail and bridge
- Lightening storms
- High tides and debris
- Crossing the mouths of rivers
- Strangers
- Valuables

Safety and security

Safety and security rules:

- Always use a flashlight
- Always walk in groups of 2+ people at night
- Always listen to safety instructions from locals
- Never take valuables to the beach
- Don’t take unnecessary risks
- Take care with tools
- Be responsible with alcohol and your interactions with locals

Work plan

A typical day:

- 4am - Censo
- 8am - Breakfast
- 9am - Morning work
- 12pm - Lunch
- 2pm - Afternoon work
- 6pm - Dinner
- 8pm - Patrol 1
- 12am - Patrol 2
- Shifts in the hatchery all day

Work plan

Volunteer commitments:

Please:

- Always be punctual
- Respect the work roster and regularly check for changes
- Arrive at <u>9am</u> to work

(If you did the second patrol the night before you don't need to come to work until <u>2pm</u>)

- Enjoy one day off and one group excursion day each week

Fun stuff

Make the most of the hostel!

- The hostel offers tours to the Corcovado National Park, snorkeling and diving at Caño, Island, community-based tours, canopy tour, and much more!
- Check our the posters at the hostel for tour options
- Also there are many public places to visit and free activities that you can do
- Ask us for ideas!

DRAKE BAY
BACKPACKERS

Your experience

It's super important that you enjoy your time at the program! If at any time you do not feel 100% happy about any aspect of the program (work, homestay, other volunteers etc) – let us know! We can solve almost any problem and we are here to help.

Welcome to the program!

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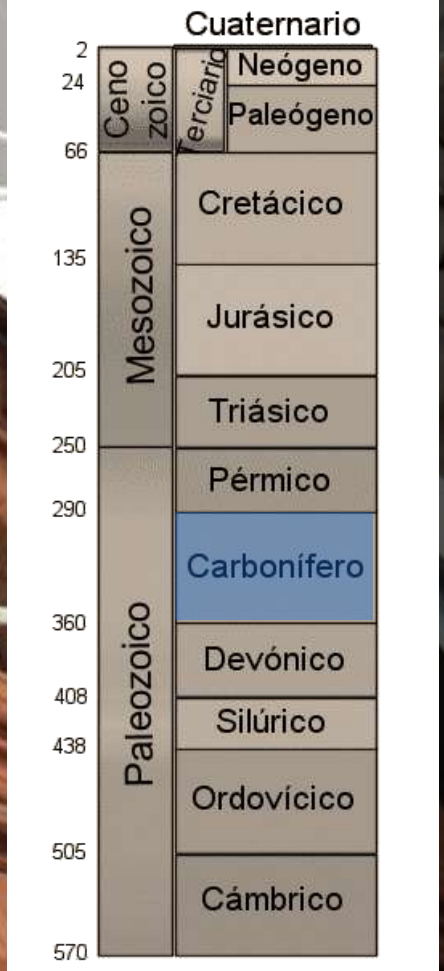
Turtle Biology

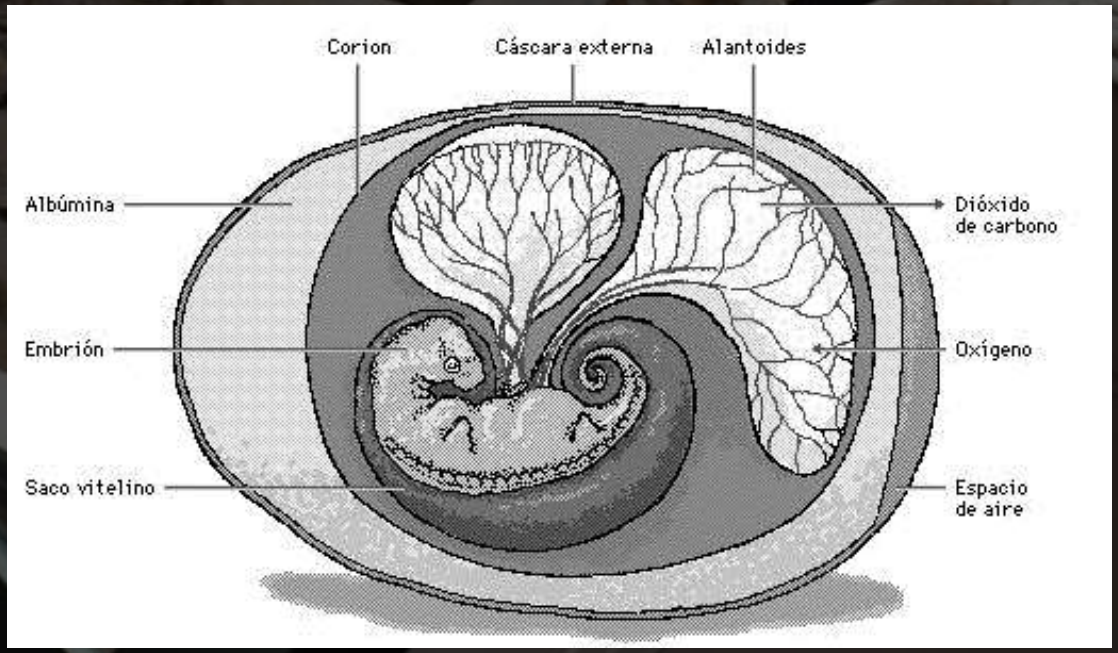
Contents:

- Evolution
- Sea turtles, fresh water turtles and tortoises
- Life cycle
- Nesting behavior
- Sea turtles species
- Threats
- Good and bad news
- What can we do?

Evolution

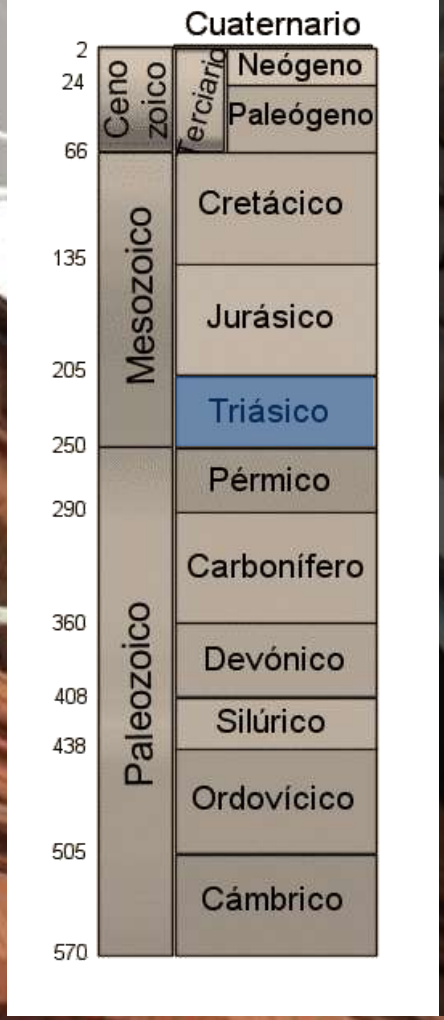


Class: Reptilia



Carboniferous (315ma)

Evolution

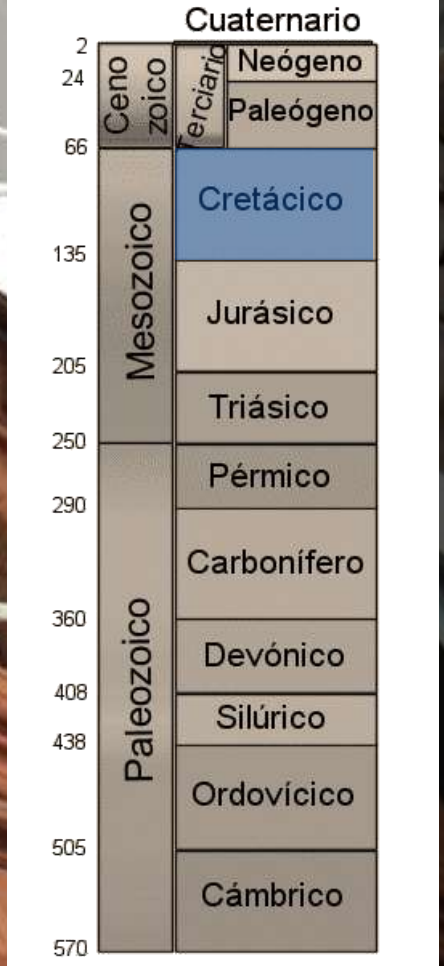


Order: Testunides

Proganochelys quenstedti

Triassic (210ma)

Evolution

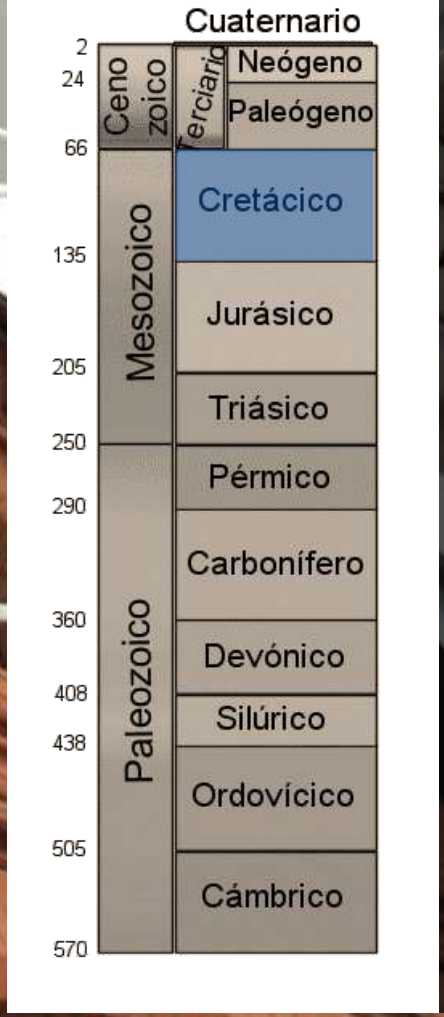


Sub-order: Cryptodira

Protostega gigas

Cretaceous (70ma)

Evolution

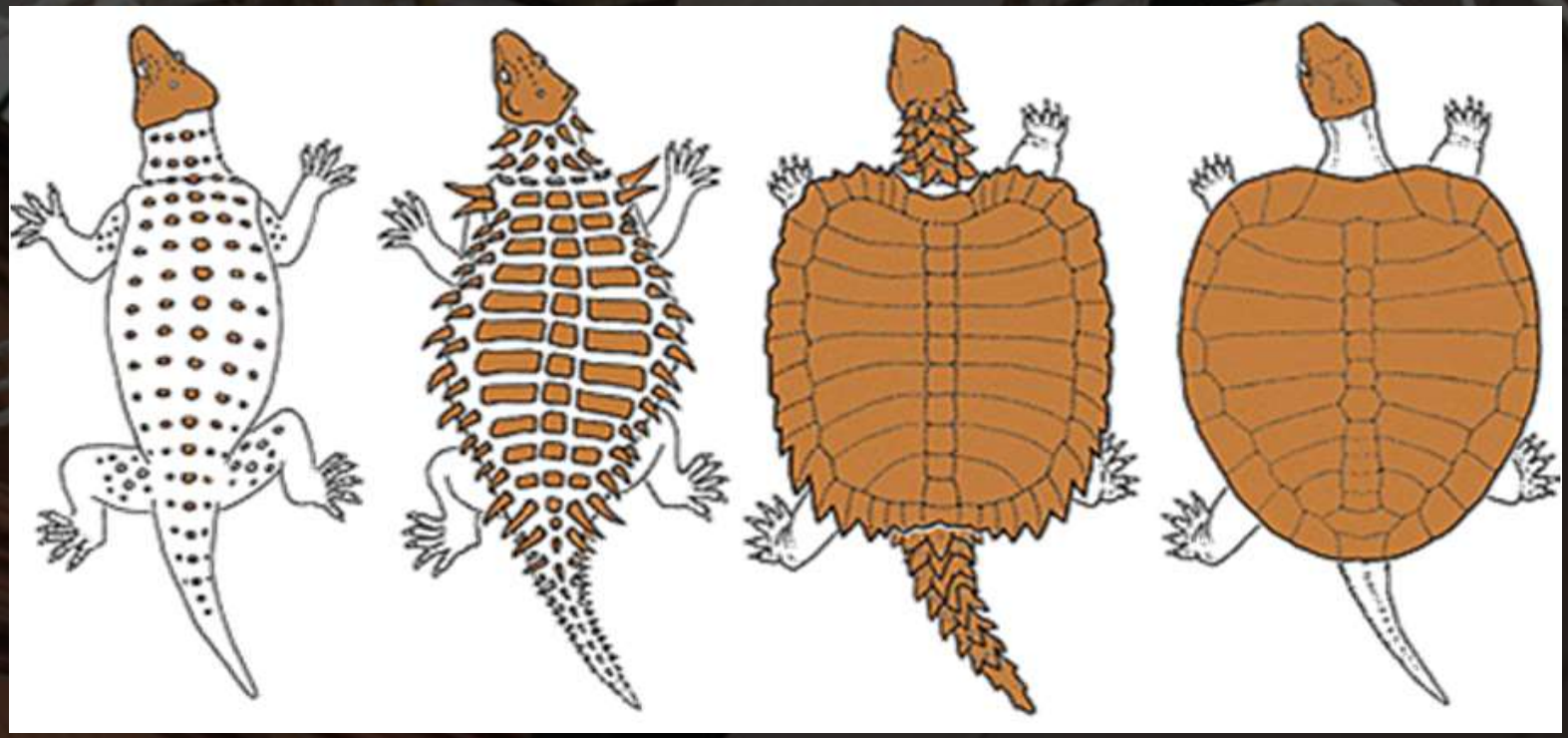


Sub-order: Cryptodira

Archelon ischyros

Cretaceous (70ma)

Evolution



Evolution

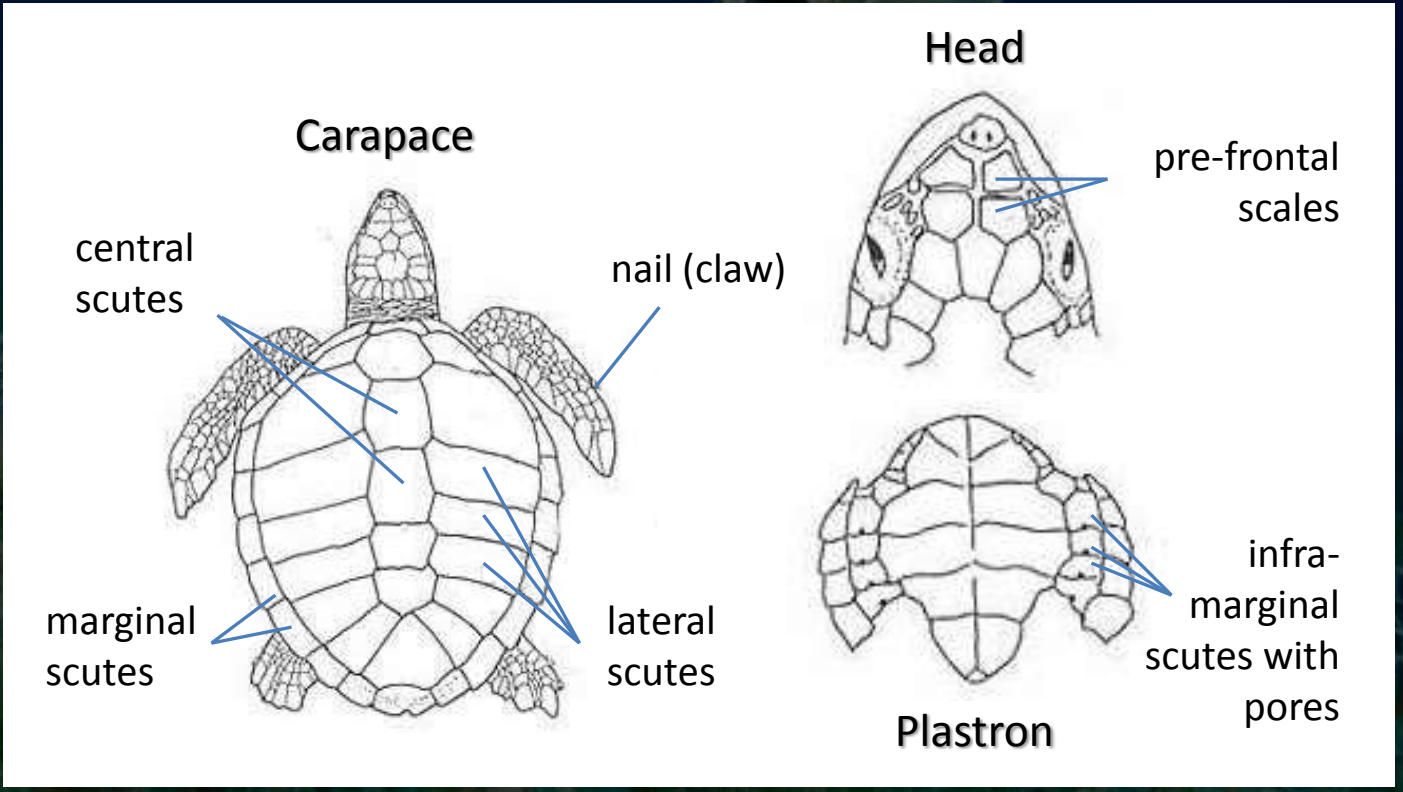
Sea turtles, fresh water turtles and tortoises

Sea turtles

Sea turtle characteristics:

- Hydrodynamic body shape, light and flat
- Extremities in the form of flippers, large flippers allow for speed in water, but retraction into shell impossible
- Large head with hornlike beak and no teeth
- Salt glands to excrete salt from bodily fluids

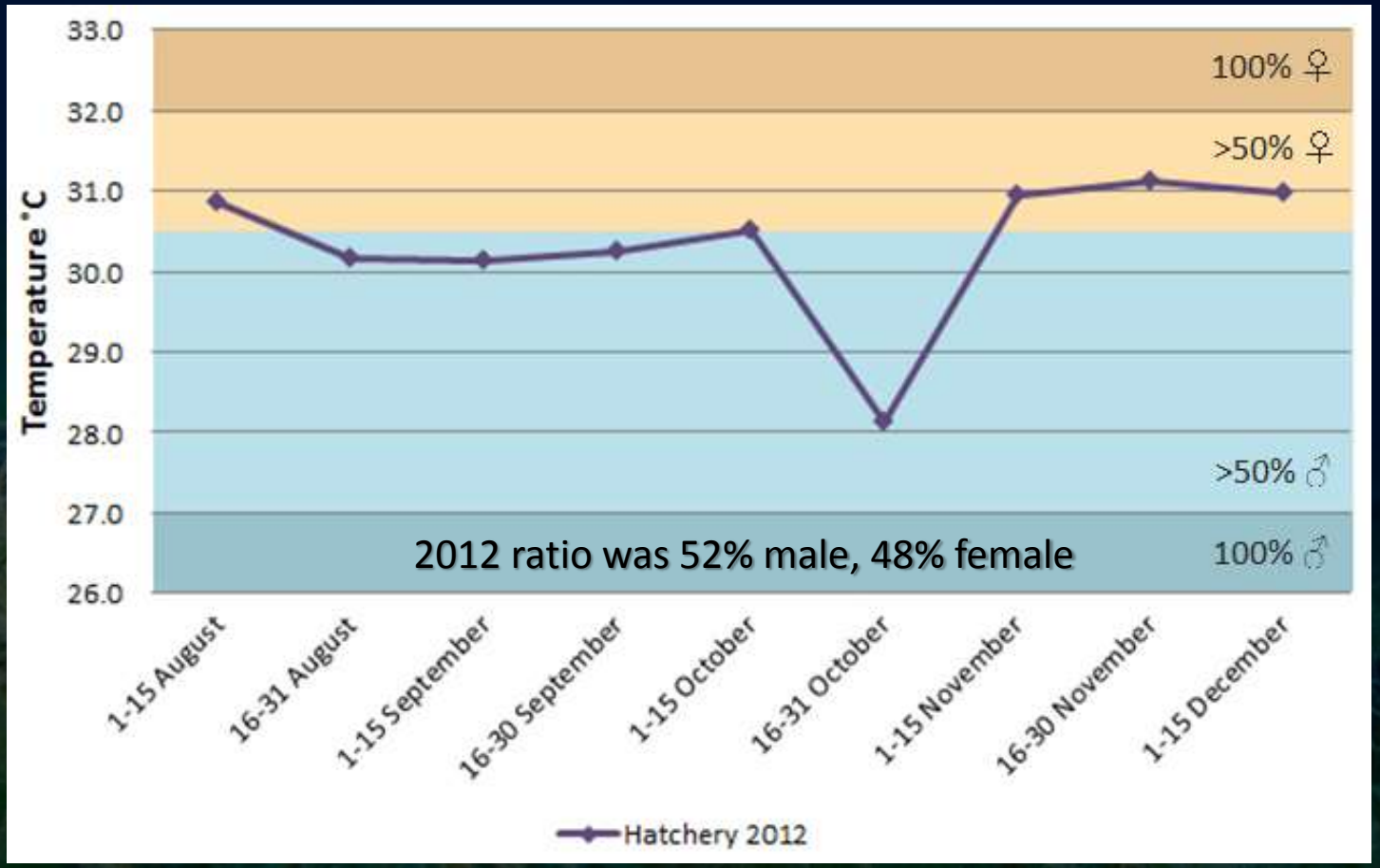
Sea turtle anatomy



Temperature-dependent sex determination (TSD)

- Common system in reptiles, such as alligators and turtles
- Does not require sex chromosomes
- All seven species of sea turtle exhibit TSD (Pattern 1A)
- Thermo-sensitive period (around third way through incubation)
- Pivotal temp produces 50:50 male:female ratio
- Eggs in middle of nest are warmer, those on outside are cooler
- Olive Ridley sea turtle (Pacific coast Costa Rica):
- <27˚C = 100% male
- 27˚C - 30.5˚C = >50% male
- 30.5˚C = Pivotal temp = 50% female, 50% male
- 30.5˚C - 32˚C = >50% female
- >32˚C = 100% female

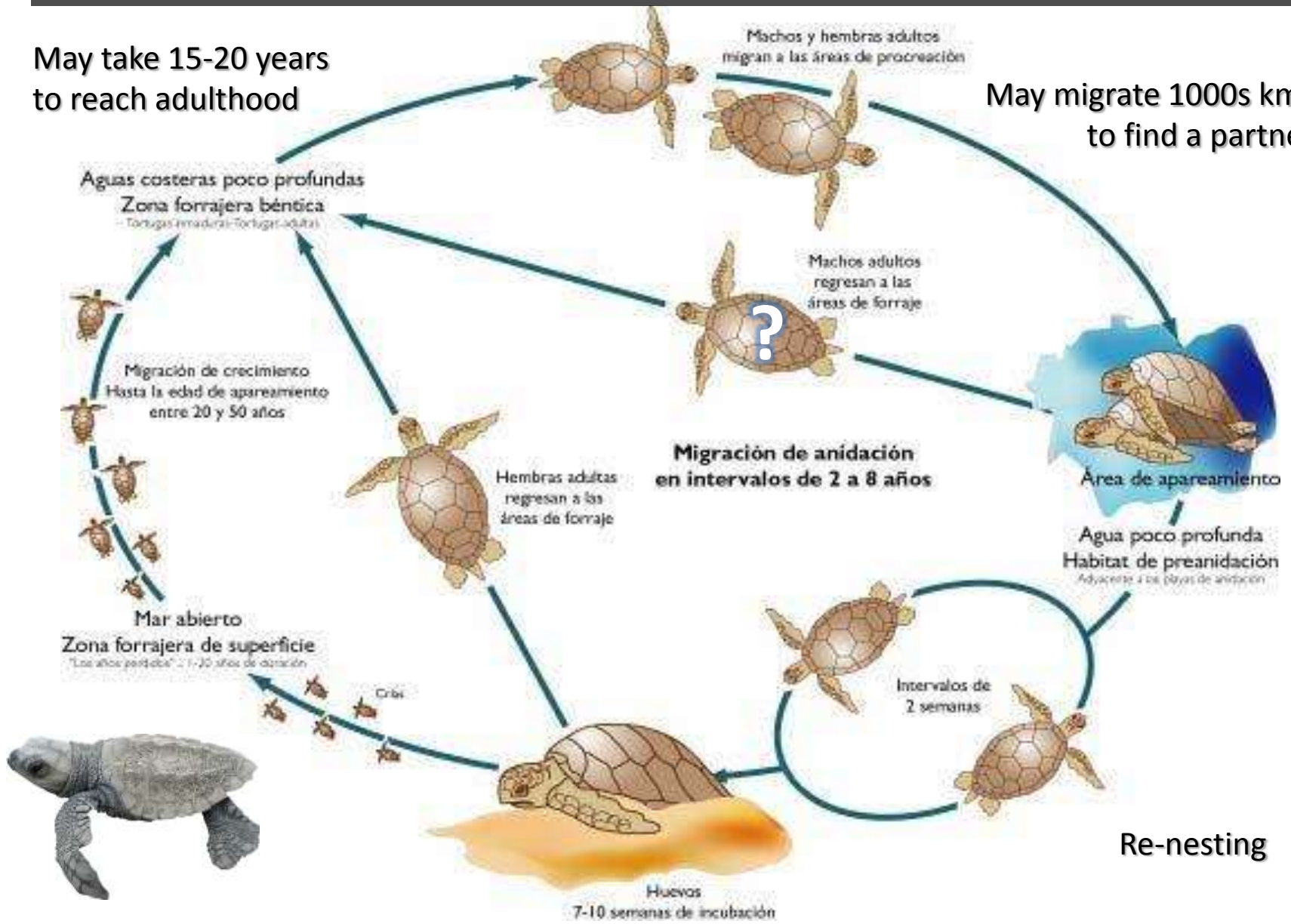
Temperature-dependent sex determination (TSD)



Life cycle of sea turtles

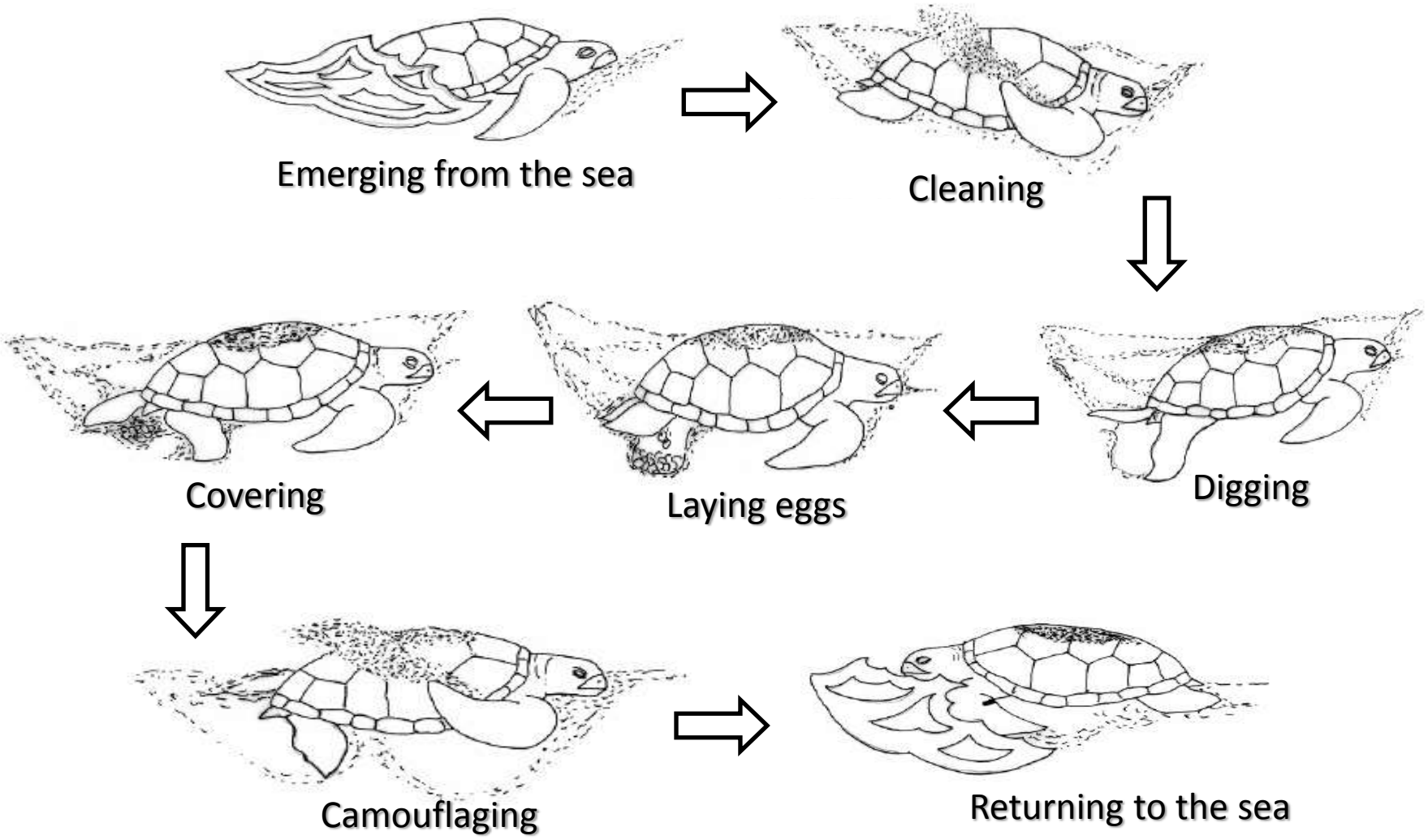
May take 15-20 years
to reach adulthood

May migrate 1000s kms
to find a partner



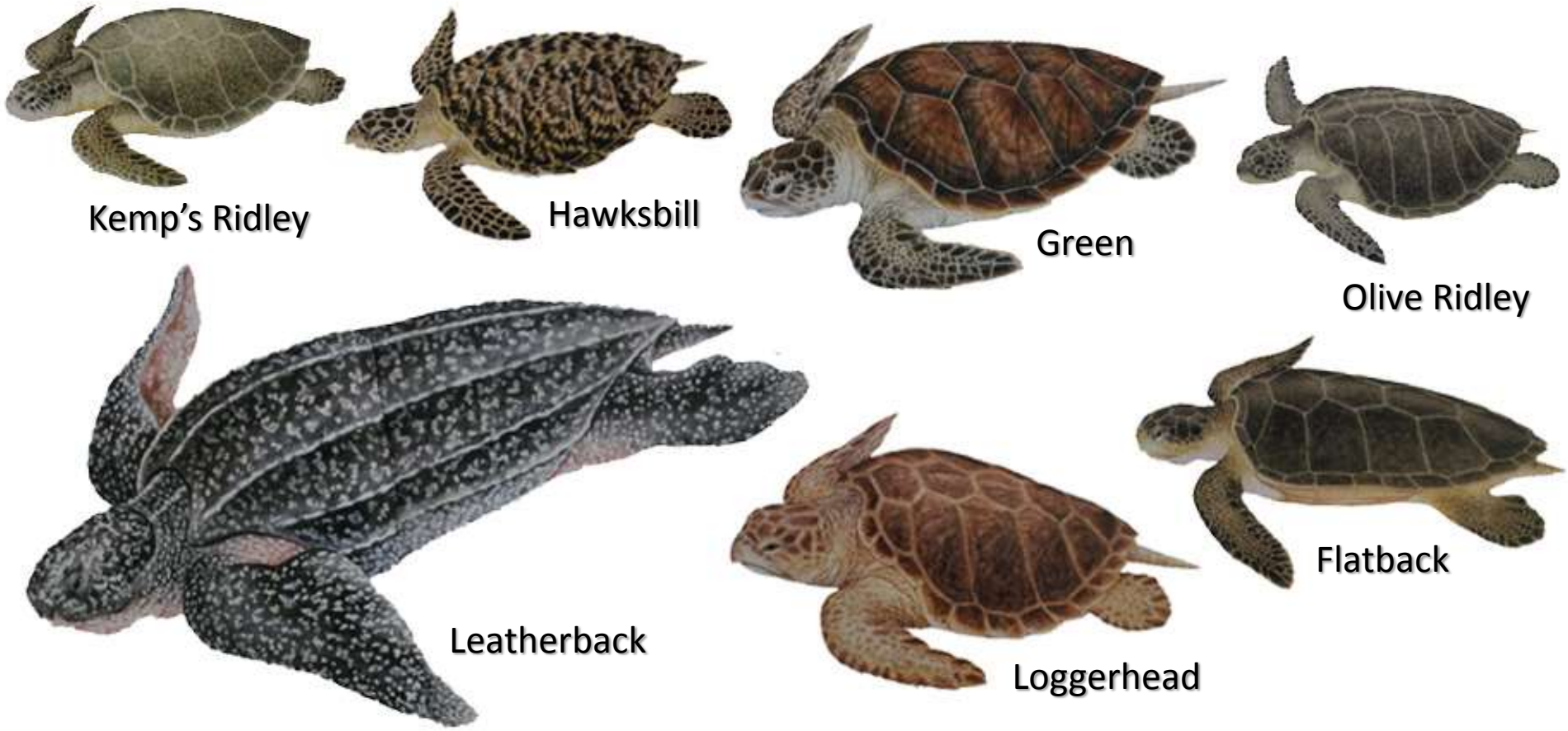
Re-nesting

Nesting behavior



Nesting behavior

Sea turtle species



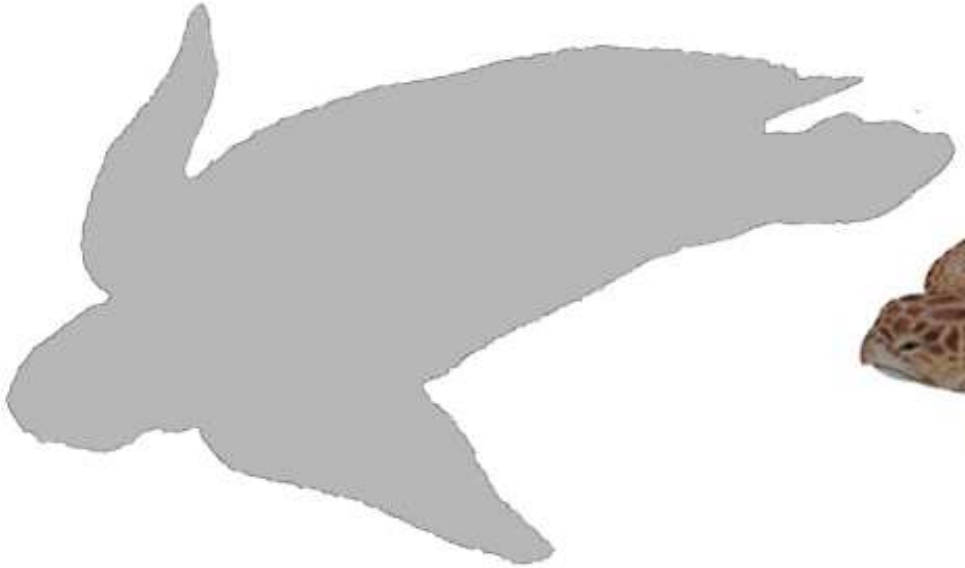
Sea turtle species

Kemp's Ridley

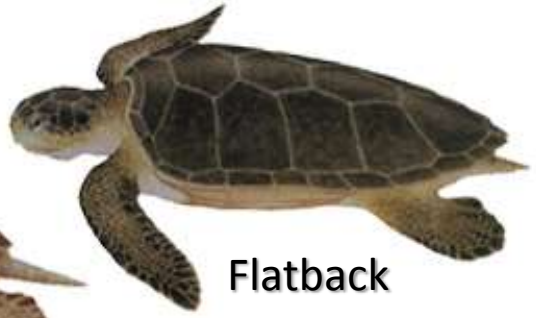
Hawksbill

Green

Olive Ridley



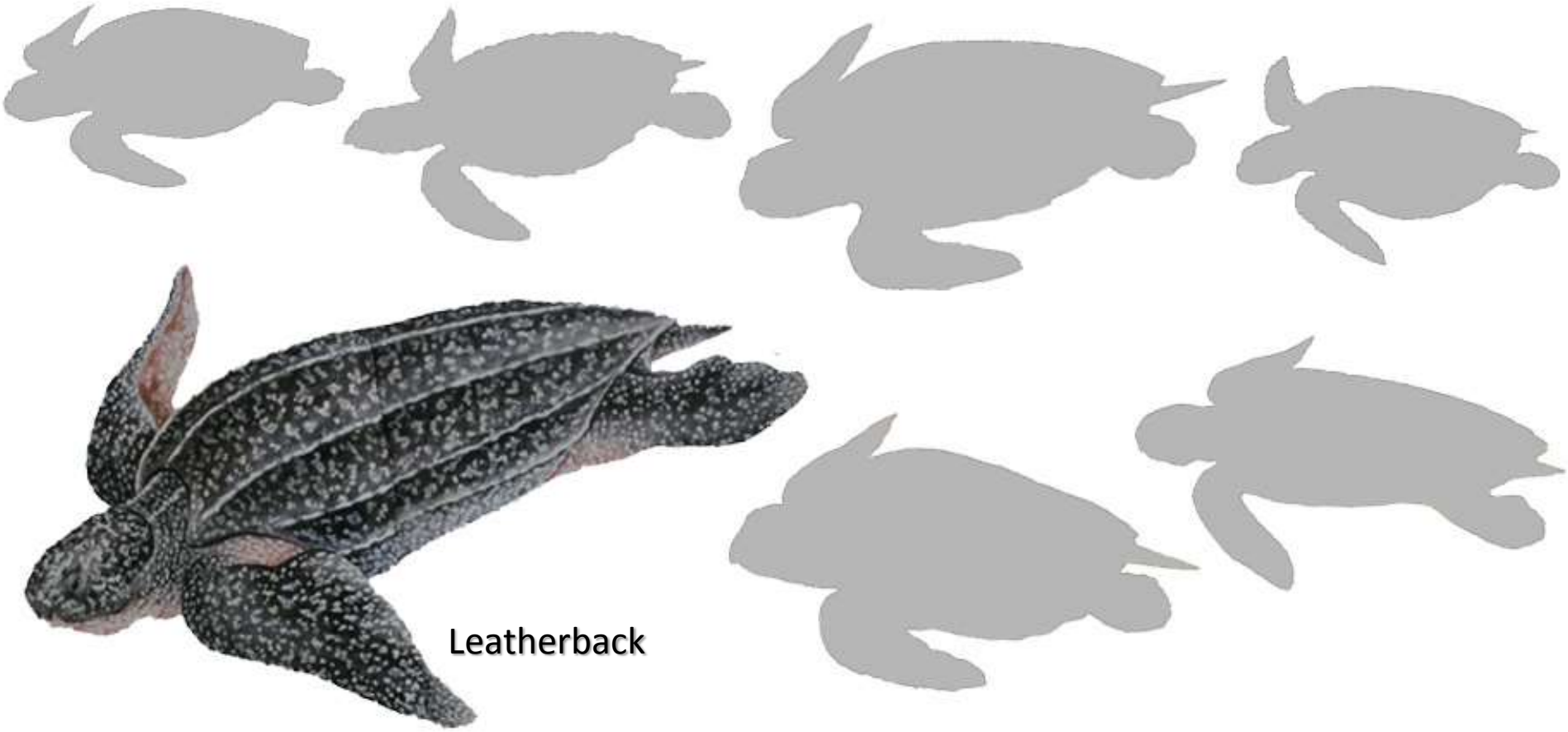
Loggerhead



Flatback

Familia Cheloniidae

Sea turtle species

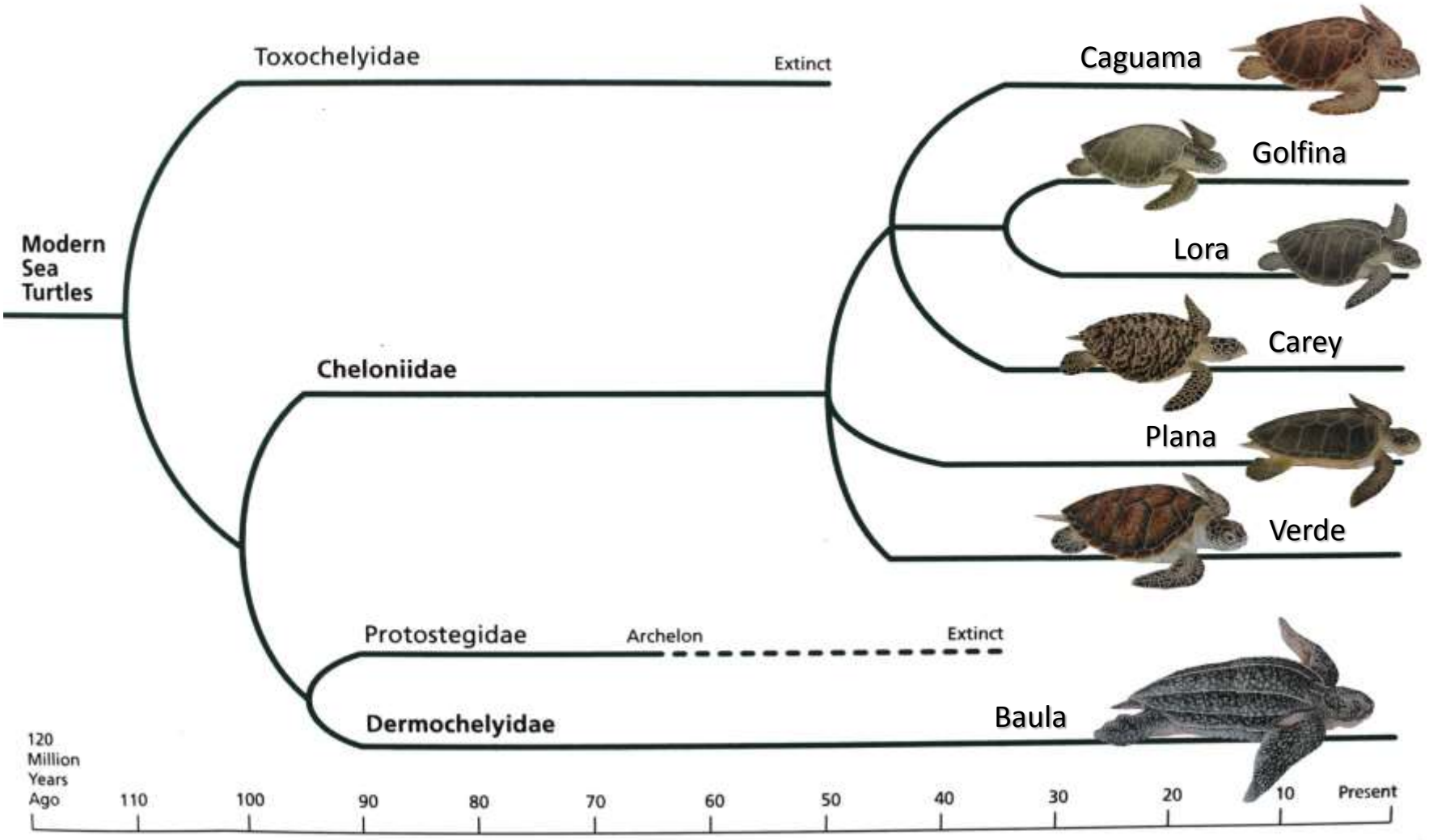


Leatherback

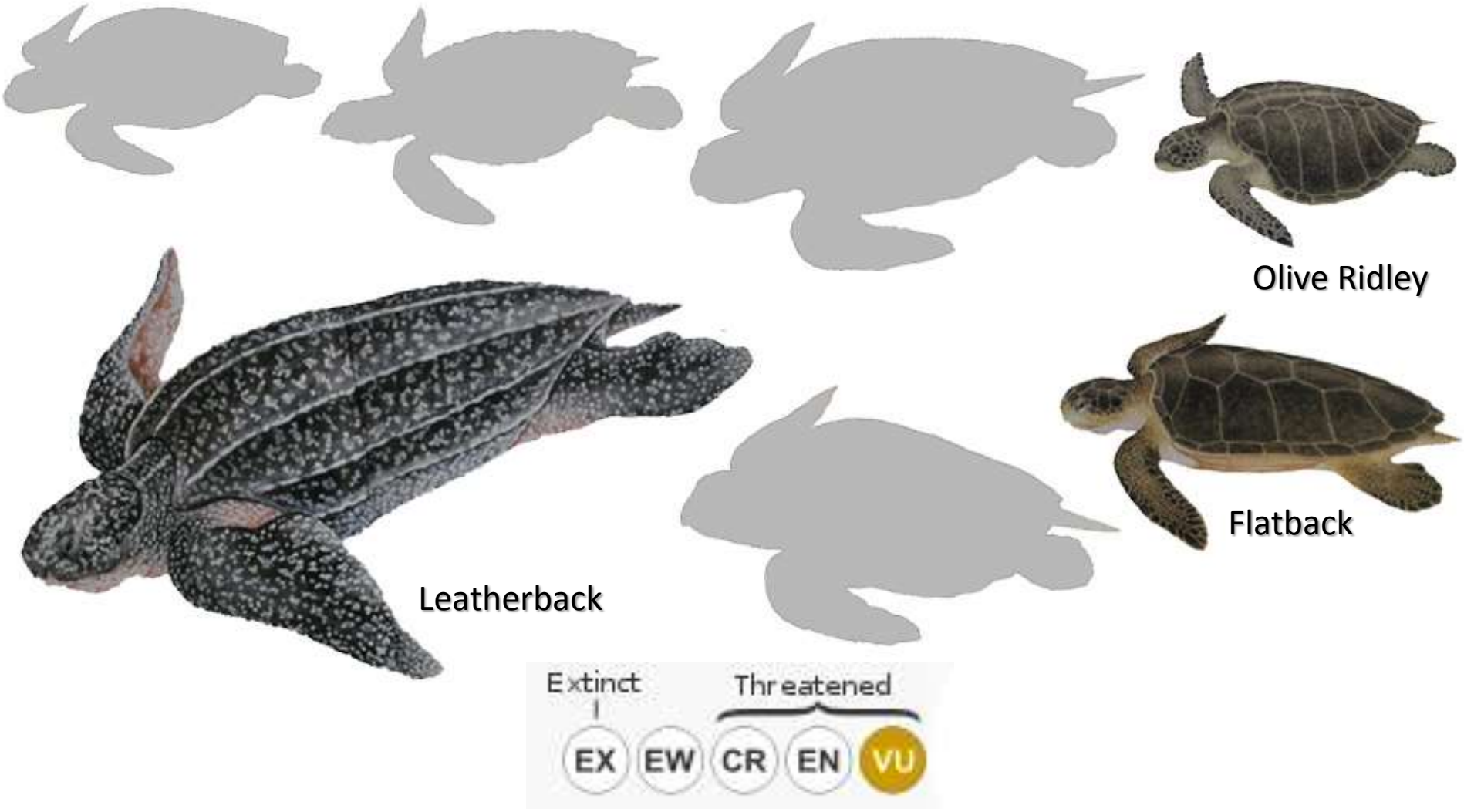
Familia Dermochelyidae

Sea turtle species

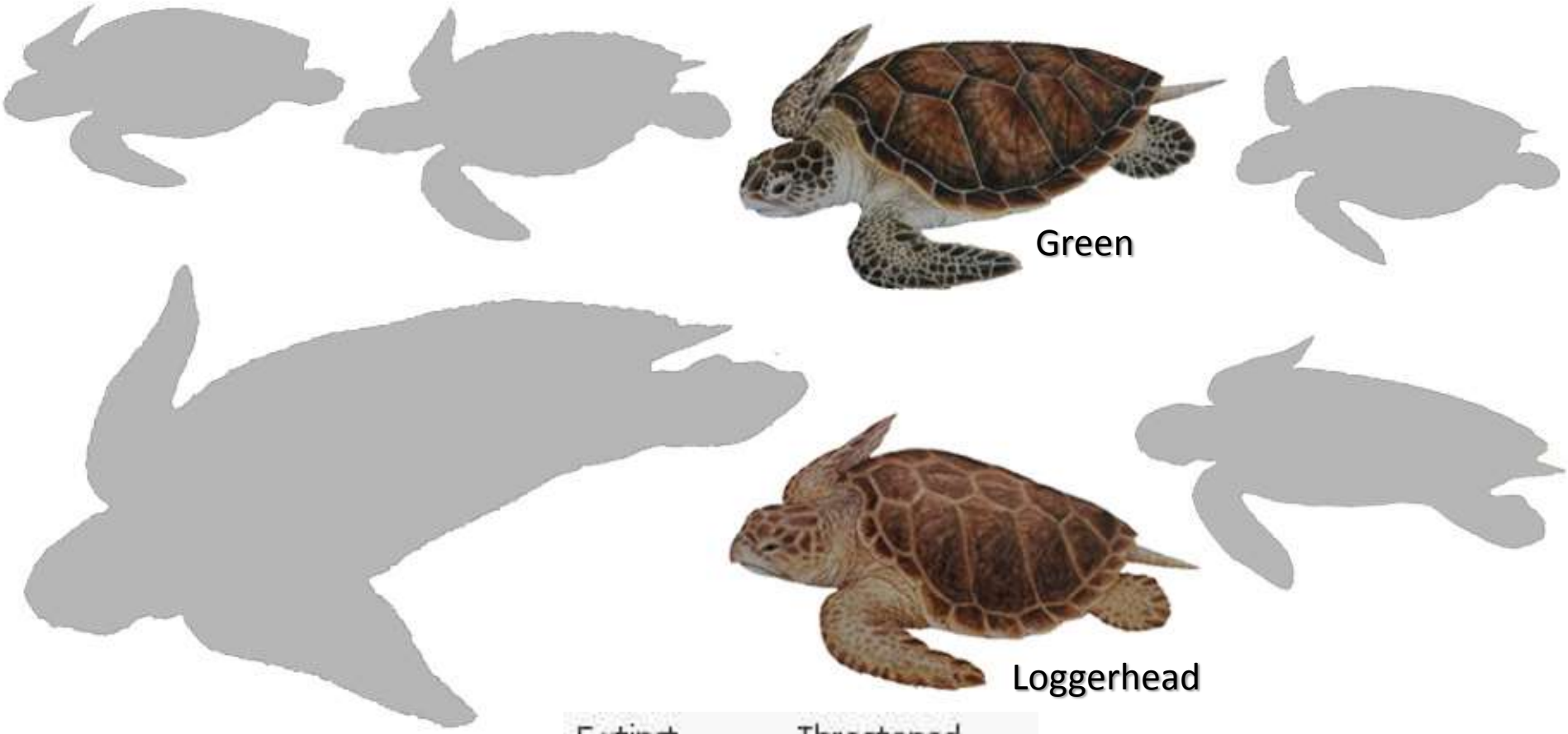
Modern sea turtles arose in the Cretaceous Period and are the descendants of an ancient line of marine turtles. Two of the four families of modern sea turtles are alive today.



Sea turtle species



Sea turtle species

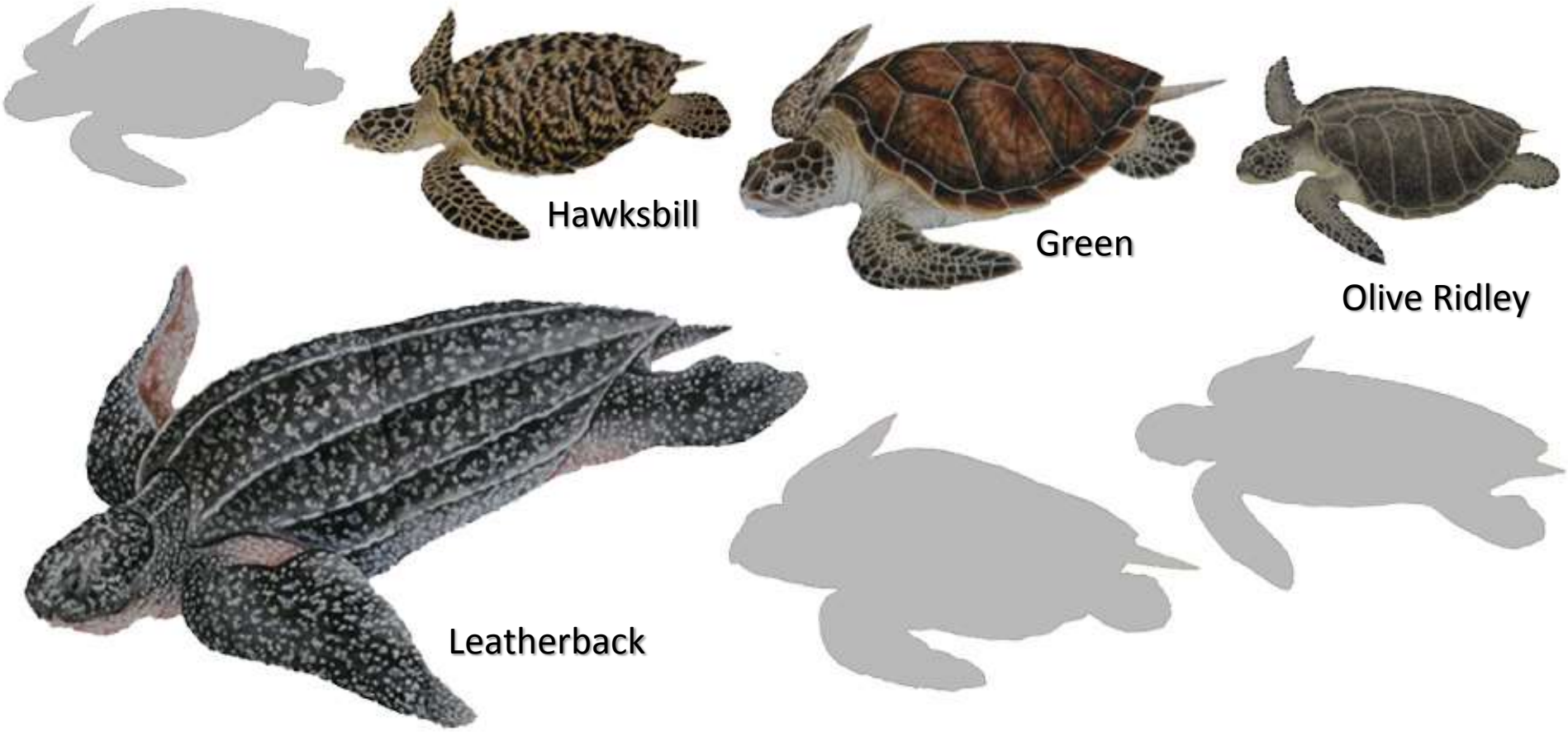


Sea turtle species

Kemp's Ridley

Hawksbill

Species that nest on Pacific Coast of Costa Rica



Leatherback Turtle

Leatherback Turtle

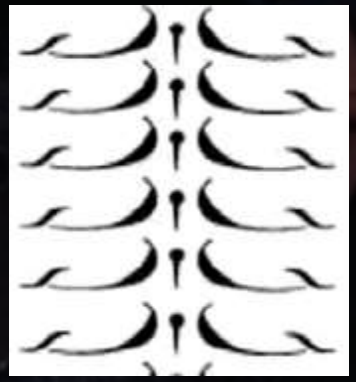
Leatherback Turtle

Leatherback Turtle

Leatherback Turtle

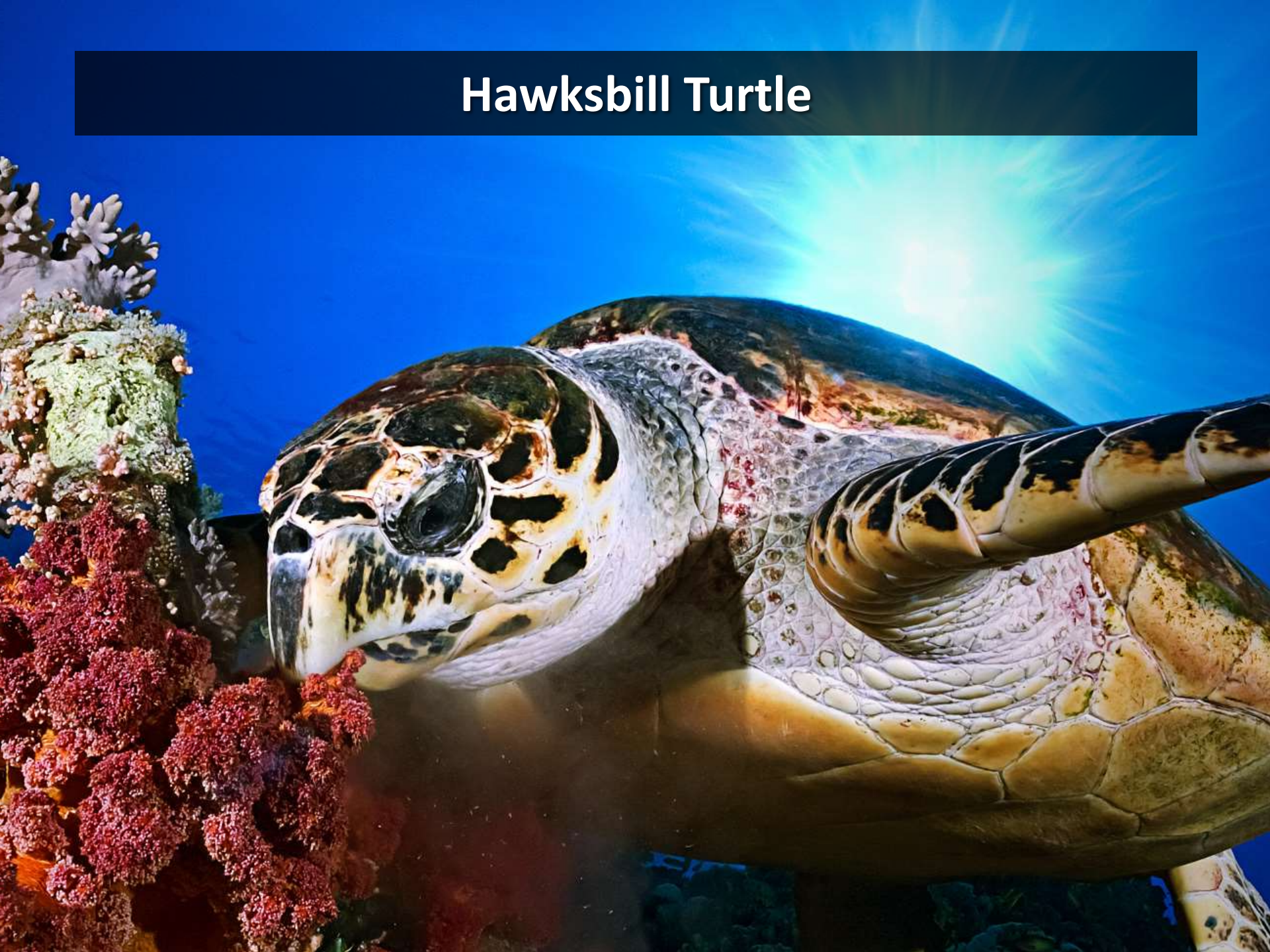
Dermochelys coriacea

- Lives: pelagic environments
- Eats: jellyfish
- Nests: December-March (Pacific) March-July (Atlantic)
- Carapace length: 150-200cm
- Weight: 500-700kg
- 70 eggs + 30 false eggs
- No PF scales, no scutes, no nails



Hawksbill Turtle

Hawksbill Turtle

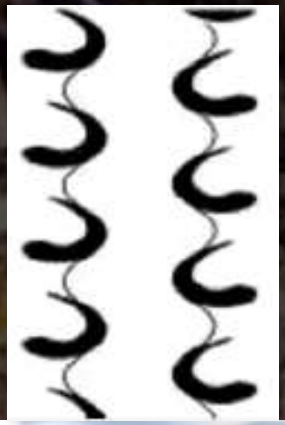


Hawksbill Turtle

Hawksbill Turtle

Eretmochelys imbricata

- Lives: coral reefs
- Eats: sponges
- Nests: May to November
- Carapace length: 80cm
- Weight: 65kg
- 150 eggs
- 2 pairs PF scales, 5 central & 4 pairs lateral scutes, 2 nails



Green Turtle

Green Turtle

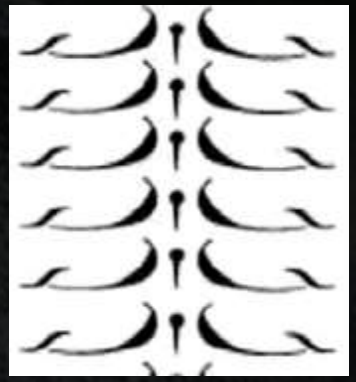
Green Turtle

Green Turtle

Green Turtle

Chelonia mydas

- Lives: coastal environments
- Eats: fish and invertebrates (Pacific) sea grass (Atlantic)
- Nests: December-March (Pacific) July to October (Atlantic)
- Carapace length: 90cm
- Weight: 100kg
- 70 eggs (Pacific), 130 eggs (Atlantic)
- 1 pairs PF scales, 5 central & 4 pairs lateral scutes, 1 nail



Olive Ridley Turtle

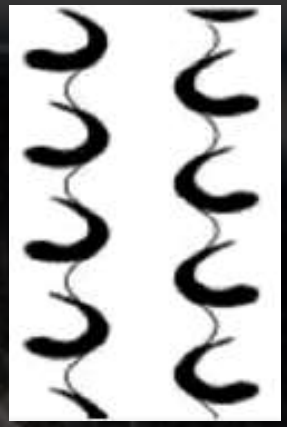
Olive Ridley Turtle

Olive Ridley Turtle

Olive Ridley Turtle

Lepidochelys olivacea

- Lives: coastal environments
- Eats: fish and shrimp
- Nests: July to December
- Carapace length: 65cm
- Weight: 40kg
- 100 eggs
- 2 pairs PF scales, 5-9 central & 5-9 pairs lateral scutes, 1-2 nails



Olive Ridley Arribada

Threats

Beach development

Threats

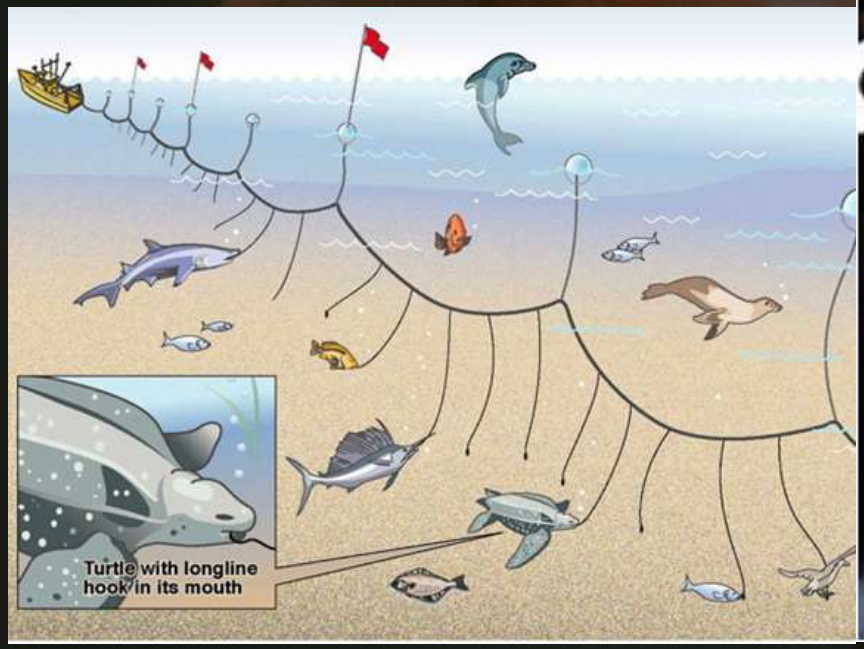
Tourism

Threats

Plastic contamination

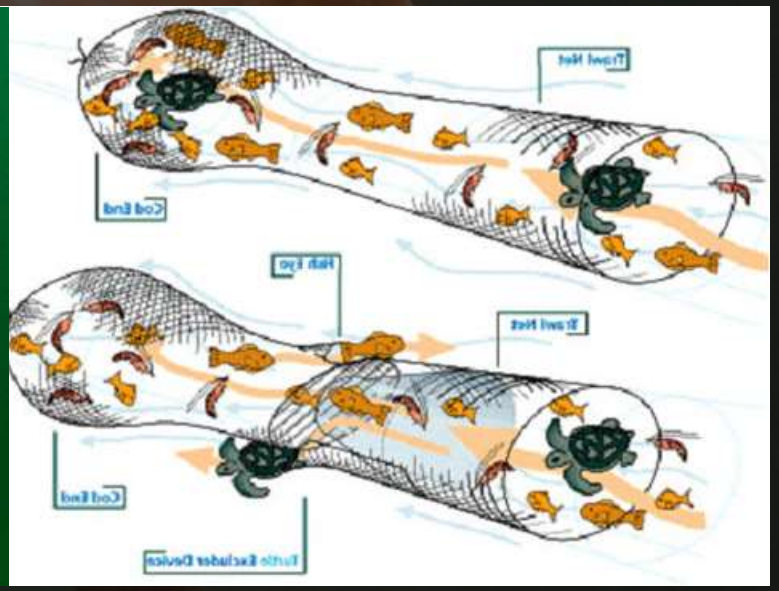
Threats

Incidental capture



Threats

Incidental capture



Threats

Predation

- Eggs: coatis, raccoons, crabs, dogs, flies, fungi, **humans**
- Hatchlings : birds, crabs, fish, sharks
- Adults: sharks, jaguars, crocodiles, **humans**

Threats

Poaching

What can we do?

Bad news ☹

- All seven species of marine turtle are endangered
- Typically 80% reduction in 20 years; up to 90% in some areas
- East Pacific Hawksbill and Leatherback on brink of extinction
- Loss of biodiversity and damage to ecosystems
- Loss of revenue from ecotourism
- Conservation can negatively impact rural communities

What can we do?

Good news ☺

- Kemp Ridley has been saved from extinction
- Some Atlantic Leatherback and Kemp Ridley populations are growing exponentially
- The Olive Ridley and the Leatherback have recently been reclassified as ‘Vulnerable’
- Conservation model has be proven to be effective
- Increased global awareness of plight of sea turtles
- Changes in fisheries legislation; increased use of TEDs

What can we do?

Ways you can help ☺

- Consume responsibly, try not to use plastic bags or bottles
- When visiting nesting beaches, respect nesting areas
- Do not drive quad bikes or ride horses on nesting beaches
- Try to keep away from nesting beaches at night
- Keep hotel lights switched off at night
- Do not consume turtle products, denounce their sale
- Support conservation projects wherever you find them

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- Morning patrol (censo)
- Night patrols
- Rules
- Hatchery
- Relocation of nests
- Liberation of hatchlings
- Excavation of nests

Methodology

Characteristics of sea turtle programs:

- Generally located in remote areas often prone to adverse conditions
- Nocturnal
- Constant
- Labor-intensive
- Standardized

Morning patrol (censo)

Activities:

- Leave the camp at 4:30am (Drake) or 4:00am (Río Oro)
- Look for new tracks and nests
- Record any new data
- Evaluate work from night patrols, check camouflaging
- Relieve hatchery night shift

Morning patrol (censo)

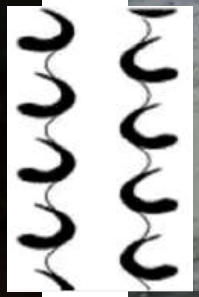
How to identify tracks

Hawksbill

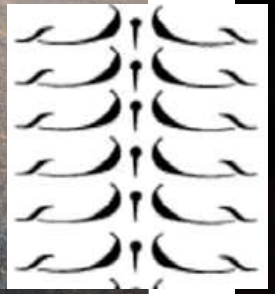
Olive Ridley

Leatherback

Green



Asymmetric



Symmetric

Night patrols

Items to bring on patrol:

- Patrol backpack
- Dark clothes
- Headlamp with red light
- Ponchos
- Water
- Radio (Río Oro)

- You should be **ready to go** at 7:30pm or at 11:30pm

Night patrols

Rules:

- **Lights**: we don't use white light on the beaches and we only use red light when necessary
- **Leader**: is responsible for making the decisions and for checking the data
- **Rhythm**: the group walks quietly and at the same pace. No-one walks in front of the leader and no-one walks alone. We are a team ☺

Night patrols

Also, please <u>do not</u>...

- Arrive drunk to work at the beach nor drink during patrols or hatchery shifts
- Smoke while patrolling. You are allowed to smoke during resting breaks
- Take drugs at any time
- Finish the night patrol early, unless….

Night patrols

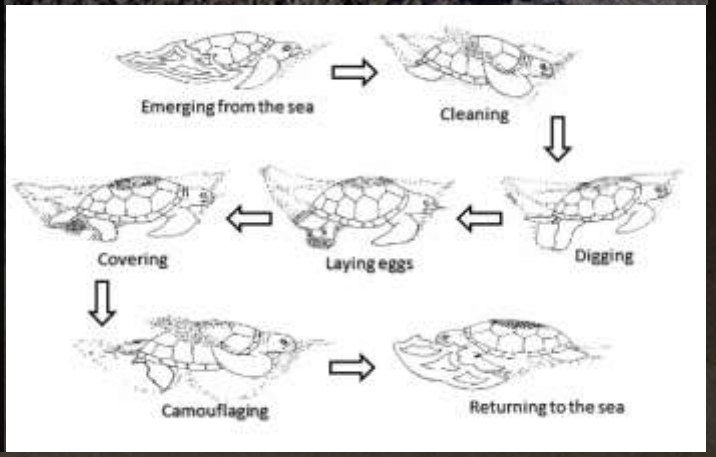
Permitted reasons to finish a patrol early:

- Dangerous lightening storm (leave the beach if <10 secs between thunder & lightening)
- Very heavy rain causing minimal visibility (leave the beach if you cannot see or it becomes dangerous)
- Aggressive or dangerous people on the beach
- Very high tides

Night patrols

Upon encountering a track:

- Stop, let the leader go ahead
- Always stay behind the turtle
- What is the turtle doing?
- Wait until she is laying her eggs before inspecting the turtle
- Is she already tagged?
- If no, the priority is to tag her then start recording data



Night patrols

Good practices:

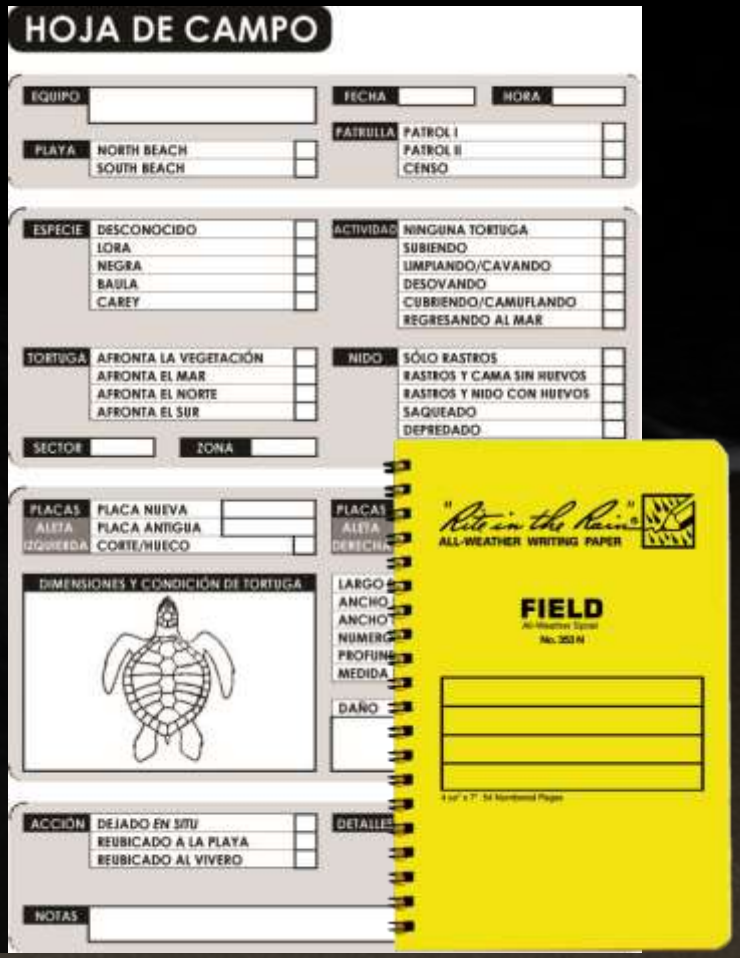
- We only tag sea turtles that nest (not false crawlers)
- We remove the eggs from the nest while she is laying them, wherever possible
- If we are far away from the hatchery, we continue to patrol to the end of the beach
- We are careful with the eggs. We don’t move them too much and we try not to let our hands transfer too much heat to them

Night patrols

Recording data:

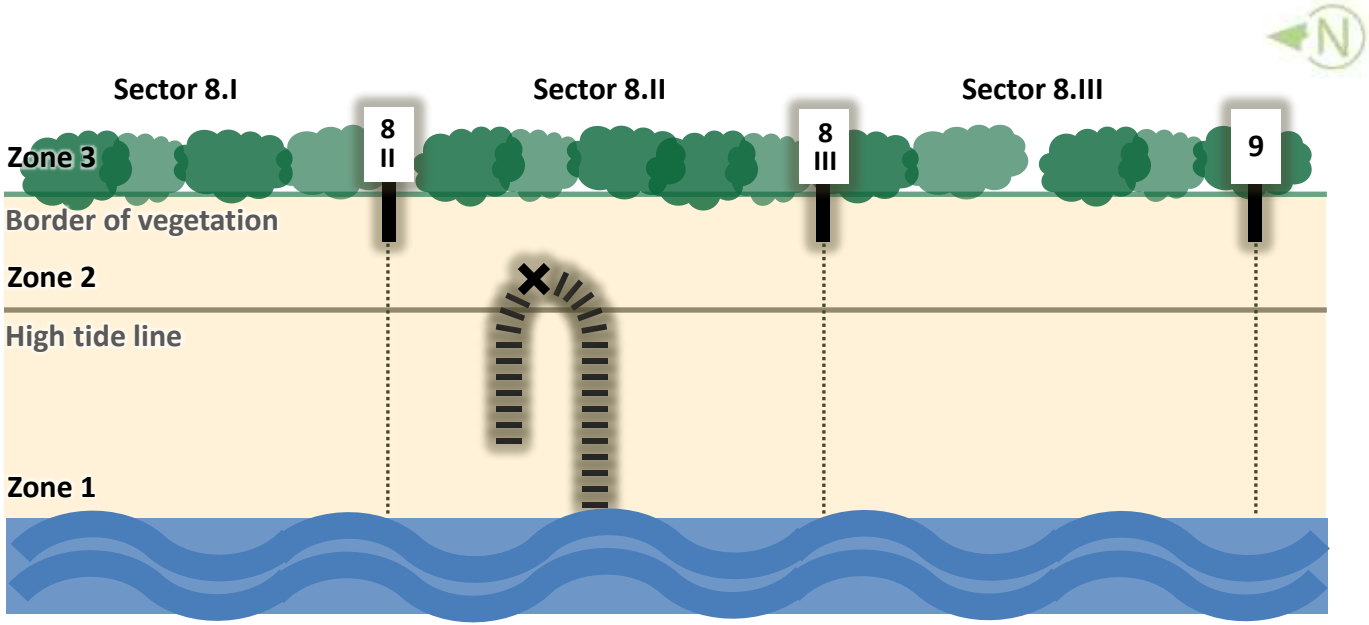
Please:

- Take care when recording data
- Be rigorous and precise with your measurements
- Record all of the data before continuing on the patrol
- If you forget something, leave it blank; never make up data
- In Drake we use Field Data Forms; in Río Oro we use a Field Data Book



Night patrols

How to identify the sector and the zone

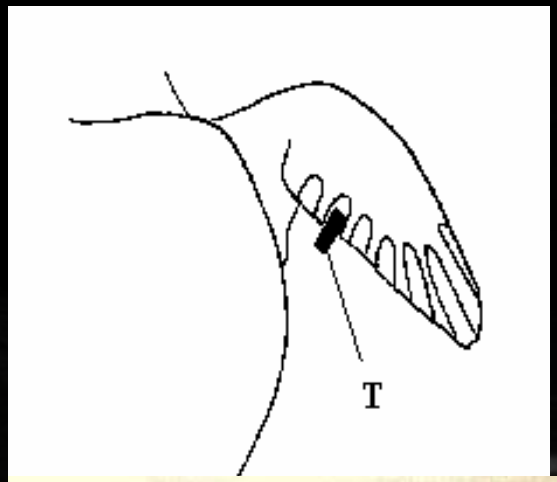


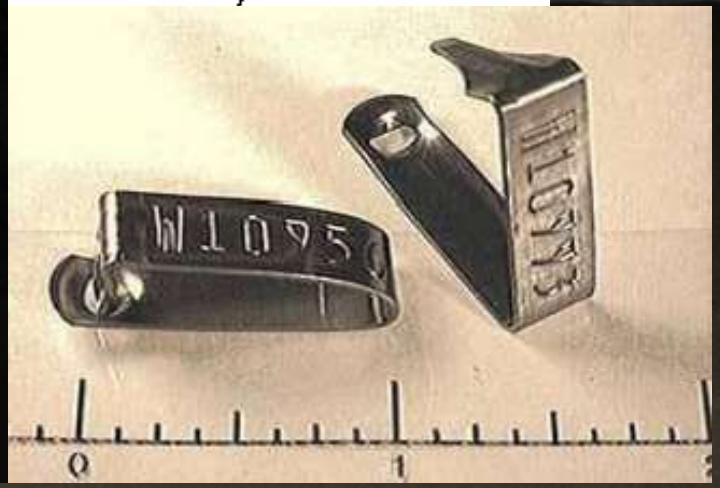
Night patrols

Tagging turtles:

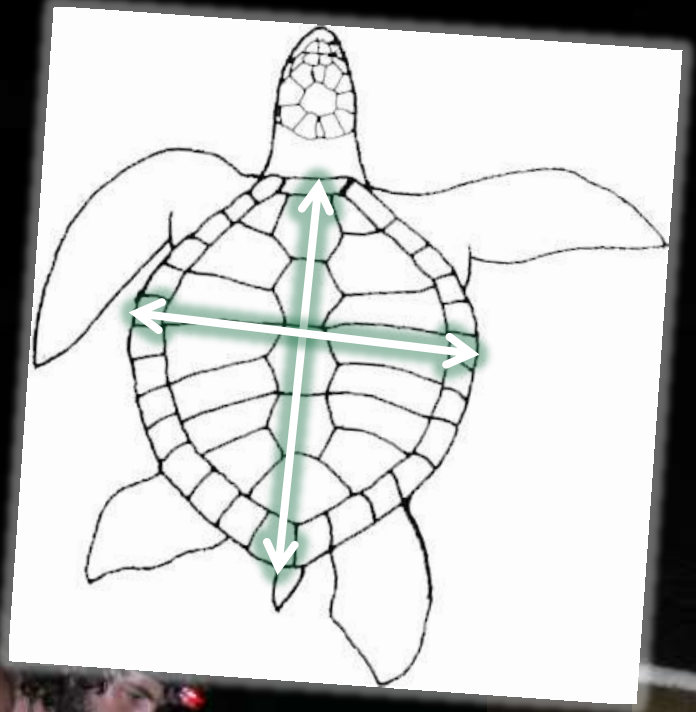
Please:

- Always use gloves
- Spray the tag and the flipper with iodine disinfectant
- Write down the tag numbers before tagging the turtle
- Tag <u>during</u> (Olive Ridley) or <u>after</u> (Green) oviposition
- Tag one flipper (Olive Ridley) or both flippers (Green) through the second scale





Night patrols



Measuring turtles and tracks:

Please:

- Find the longest measurement of the carapace
- Measure the length and width several times, until you repeatedly come up with the same measurement
- Inspect for any damage or distinguishing features
- Measure the track at three different locations and record the average

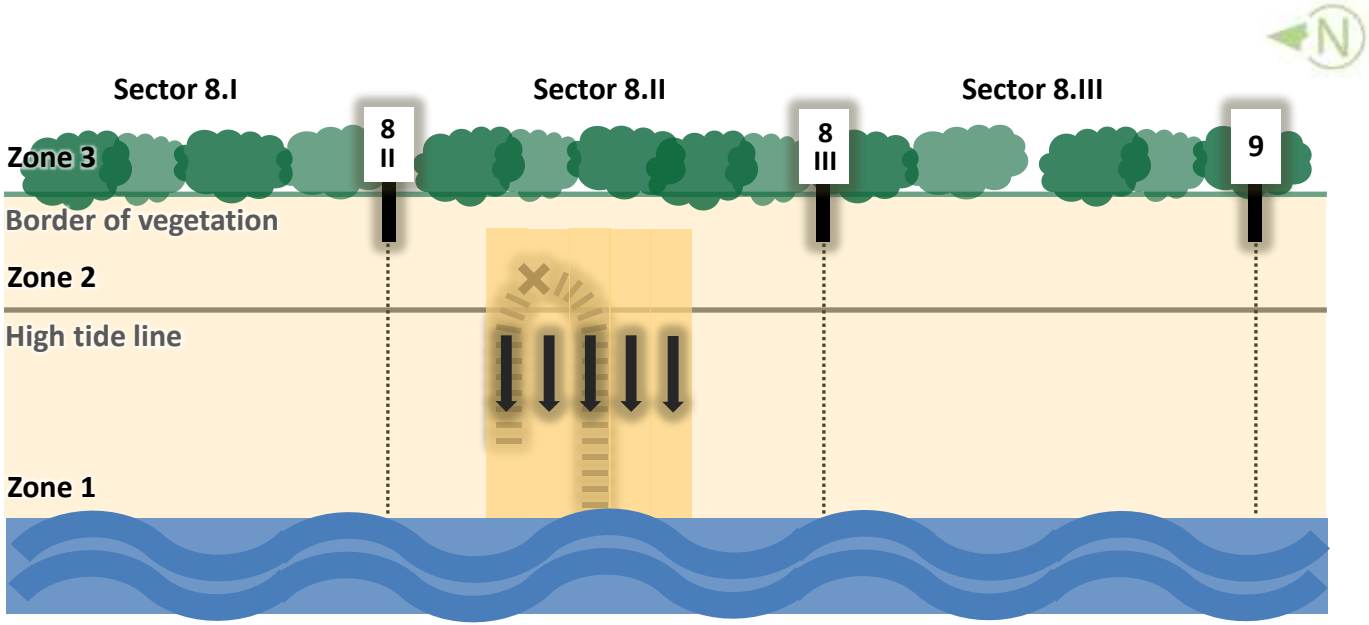
Night patrols

Camouflaging nests:

- In Drake, we camouflage all nests regardless of whether we relocate them or not
- If we always camouflage a poacher cannot learn if the nests have been moved or not
- In Río Oro, we mark a big X through the tracks so that others know the nest has been registered. It's just not possible to camouflage all the nests!

Night patrols

How to camouflage nests and tracks



Hatchery

The hatchery:

- In Drake, the hatchery is located on the North beach in zone 3
- Each nest has a code and occupies 1m^2
- It is monitored 24 hours / day
- 4x shifts of 6 hours / day: 6am-12pm, 12pm-6pm, 6pm-12am, 12am-6am
- ACOTPRO works in the hatchery overnight

Hatchery

Shifts in the hatchery:

Please:

- Always be very punctual
- Check the nests every 30 minutes during the day
- Check the nests every hour during the night
- Always wait until the next person arrives to relieve you
- Do not eat, drink or smoke inside the hatchery enclosure

Relocation of nests

Receipt of nests in the hatchery:

- The hatchery manager should dig the nest and bury the eggs
- La patrol group should leave the eggs and continue patrolling, unless resting

The hatchery manager will:

- Record the data in the hatchery book
- Camouflage the nest location by raking the hatchery

Relocation of nests

Good practices:

Please:

- Always use gloves
- Working quickly but carefully
- Dig the nest as instructed
- Count the eggs as you put them in the nest
- Record the data in the hatchery book
- Put the nest in more or less randomly but uniformly
- Never re-use a nest site

Relocation of nests

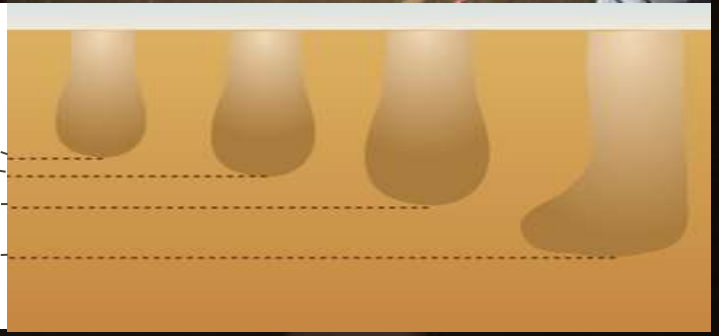
How to build a nest

Olive Ridley 40-45cm

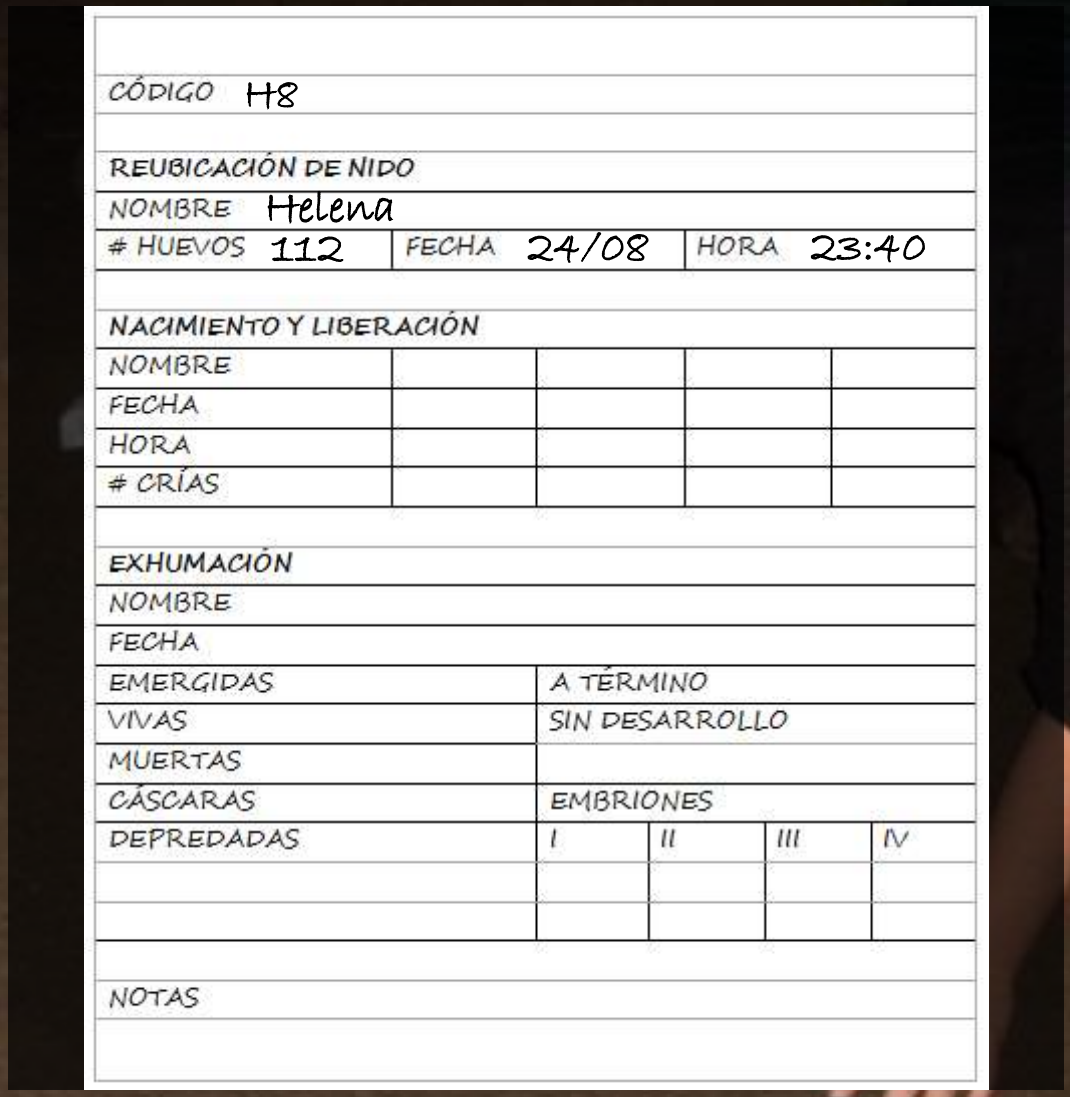
Hawksbill 45-50cm

Green 55-60cm

Leatherback 75-80cm



Relocation of nests



CÓDIGO H8				
REUBICACIÓN DE NIDO				
NOMBRE Helena				
# HUEVOS 112	FECHA 24/08		HORA 23:40	
NACIMIENTO Y LIBERACIÓN				
NOMBRE				
FECHA				
HORA				
# CRÍAS				
EXHUMACIÓN				
NOMBRE				
FECHA				
EMERGIDAS	A TÉRMINO			
VIVAS	SIN DESARROLLO			
MUERTAS				
CÁSCARAS	EMBRIONES			
DEPREDADAS	I	II	III	IV
NOTAS				

Liberation of hatchlings

Upon finding a nest hatching:

Please:

- Always use gloves
- Look for the correct page in the hatchery book
- Allow the nest to hatch naturally
- Transfer the hatchlings to the green bucket labelled ‘TORTUGUITAS’
- Count the hatchlings and put the data in the hatchery book

Liberation of hatchlings

CÓDIGO H8				
REUBICACIÓN DE NIDO				
NOMBRE Helena				
# HUEVOS 112	FECHA 24/08	HORA 23:40		
NACIMIENTO Y LIBERACIÓN				
NOMBRE	Rob	Steph	Alvaro	
FECHA	16/10	17/10	18/10	
HORA	05:30	16:50	16:50	
# CRÍAS	95	4	1	

EXHUMACIÓN				
NOMBRE				
FECHA				
EMERGIDAS	A TÉRMINO			
VIVAS	SIN DESARROLLO			
MUERTAS				
CÁSCARAS	EMBRIONES			
DEPREDADAS	I	II	III	IV
NOTAS				

Liberation of hatchlings

Good practices:

If a nest hatches at night:

- Release the hatchlings straight away

If a nest hatches during the day:

- Put them in the green bucket with some moist sand and put the lid on loosely. You can release them at sunset

It’s good to vary where you release them, and not always in front of the hatchery - the fish will learn!

Excavation of nests

Use of biometric data:

- Determine hatching success, rates of predation, infection, occurrence of deformities, twins, albinos etc
- Evaluate methods, such as the use of a hatchery, and inform future conservation strategies

Excavation of nests

Good practices:

Please:

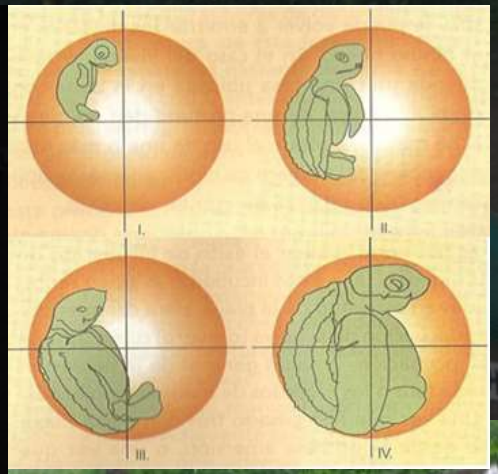
- Remove the contaminated sand from the hatchery and dump it on the beach
- Take care when opening eggs, they can spray contamination
- Dump the egg shells in a hole in the beach by the vegetation, or below the high tide line
- Move the nest trap to the next nest in the sequence. Refer to the hatcher book to see which

Excavation of nests

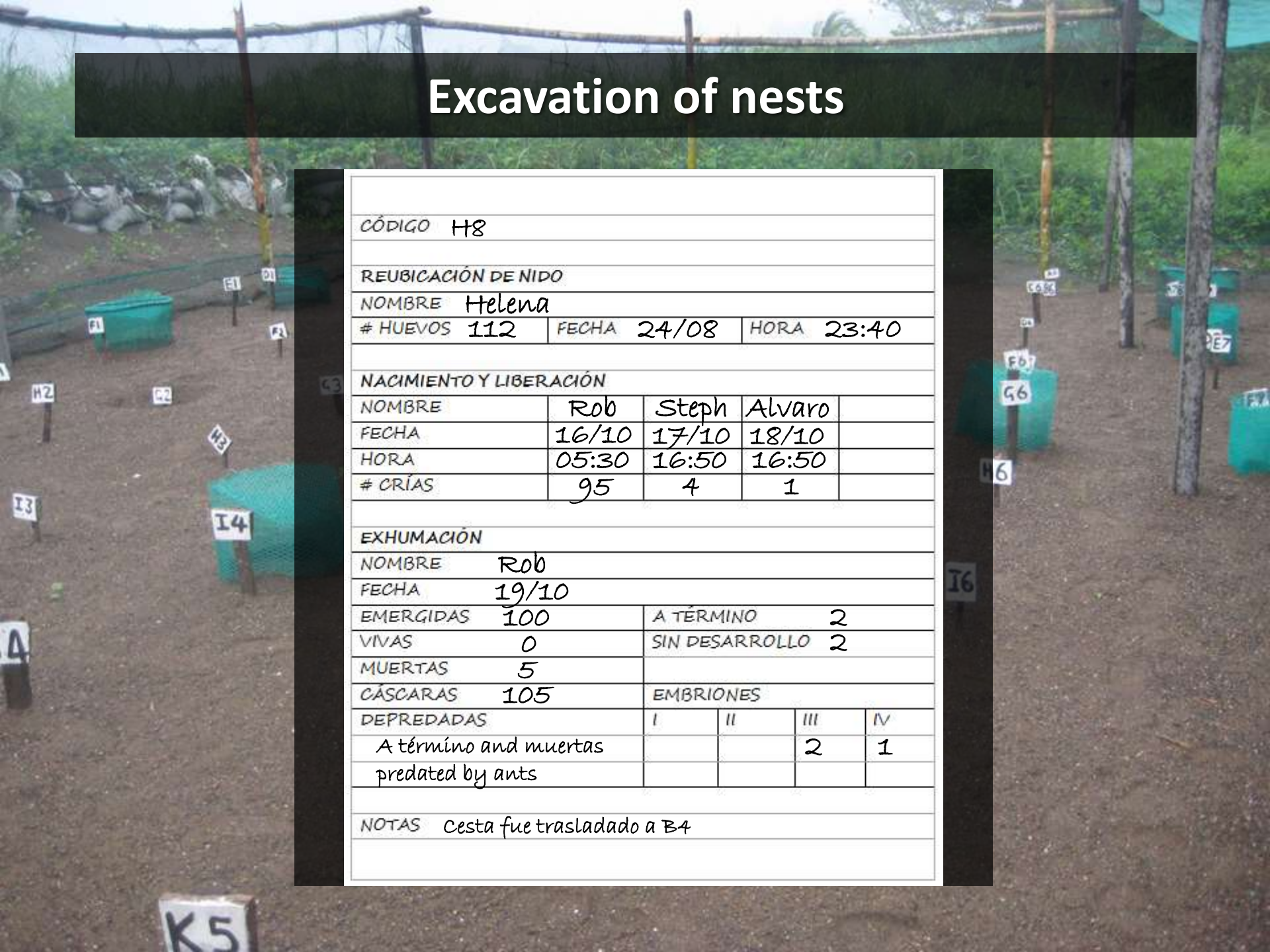
Good practices:

Please:

- Always use gloves
- Separate the dead hatchlings, whole eggs, and shell fragments
- Count those fragments of >50% egg shell as a whole egg
- Look for evidence of poaching, predation: fungus, ants etc
- Open any whole eggs and identify the stage of development as instructed



Excavation of nests



CÓDIGO H8

REUBICACIÓN DE NIDO

NOMBRE Helena

# HUEVOS 112	FECHA 24/08	HORA 23:40

NACIMIENTO Y LIBERACIÓN

NOMBRE	Rob	Steph	Alvaro	
FECHA	16/10	17/10	18/10	
HORA	05:30	16:50	16:50	
# CRÍAS	95	4	1	

EXHUMACIÓN

NOMBRE Rob

FECHA 19/10

EMERGIDAS 100	A TÉRMINO 2
VIVAS 0	SIN DESARROLLO 2
MUERTAS 5	
CÁSCARAS 105	EMBRIONES

DEPREDADAS	I	II	III	IV
A término and muertas			2	1
predated by ants				

NOTAS Cesta fue trasladado a B4