

SEA TURTLES

What are sea turtles ?

- Turtles are reptiles of the order Chelonii or Testudines characterised by a special bony or cartilaginous shell developed from their ribs and acting as a shield.
- Turtle may refer to the chelonian order as a whole or to fresh-water and sea-dwelling chelonians



bony or
cartilaginous shell
developed from
their ribs and acting
as a shield.



• Skeleton of snapping turtle
(*Chelydra serpentina*)

Limbs

- Amphibious turtles normally have limbs similar to those of tortoises, except the feet are webbed and often have long claws.
- These turtles swim using all four feet in a way similar to the dog paddle,
- Large turtles tend to swim less than smaller ones, and the very big species, hardly swim at all, preferring to walk along the bottom of the river or lake.

- As well as webbed feet, turtles have very long claws, used to help them clamber onto riverbanks and floating logs upon which they bask. Male turtles tend to have particularly long claws, and these appear to be used to stimulate the female while mating.
- While most turtles have webbed feet, some, such as the pig-nosed turtle, have true flippers, with the digits being fused into paddles and the claws being relatively small.



- Like all other extant reptiles, turtles are **ectotherms** their internal temperature varies according to the ambient environment, commonly called cold-blooded. However, **because of** their high metabolic rate, leatherback sea turtles have a body temperature that is noticeably higher than that of the surrounding water.



Turtles are classified as amniotes,
along with other reptiles
(including birds) and mammals.

Like other amniotes, turtles
breathe air and do not lay eggs
underwater, although many
species live in or around water.

Anatomy and morphology

- The largest living chelonian is the leatherback sea turtle (*Dermochelys coriacea*), which reaches a shell length of 200 cm and can reach a weight of over 900 kg.
- Freshwater turtles are generally smaller,

*Dermochelys
coriacea*

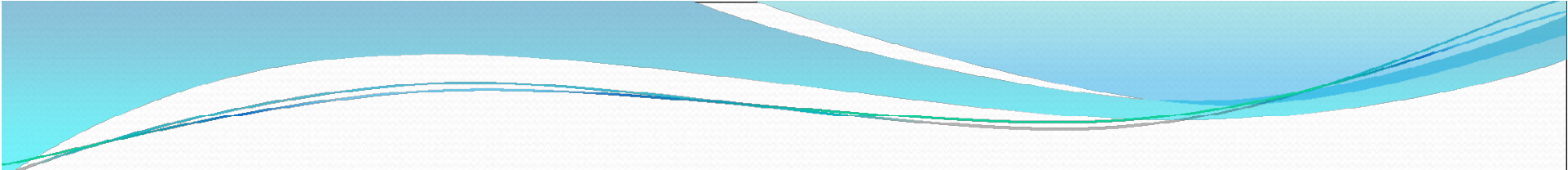


- The **largest** ever chelonian was Archelon ischyros, sea turtle known to have been up to 4.6 m long.
- The **smallest** turtle is the speckled padloper tortoise of South Africa. It measures no more than 8 cm in length and weighs about 140 g .
- **Two** other species of small turtles are the American mud turtles and musk turtles that live in an area that ranges from Canada to South America.
- The shell length of many species in this group is less than 13 cm in length.



Head

- Most turtles that spend most of their lives on land have their **eyes** looking down at objects in front of them.
- Some aquatic turtles, such as snapping turtles and soft-shelled turtles, have eyes closer to the top of the head. These species of turtles can hide from predators in shallow water, where they lie entirely submerged except for their eyes and nostrils. Near their eyes, sea turtles possess **glands** that produce salty tears that rid their body of excess salt taken in from the water they drink.

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- Turtles have **rigid beaks**, and use their **jaws** to cut and chew food. Instead of having teeth, the upper and lower jaws of the turtle are covered by horny ridges.
 - **Carnivorous turtles** usually have knife-sharp ridges for slicing through their prey.
 - **Herbivorous turtles** have serrated-edged ridges that help them cut through tough plants. They use their tongues to swallow food, but unlike most reptiles, they cannot stick out their tongues to catch food.

Shell

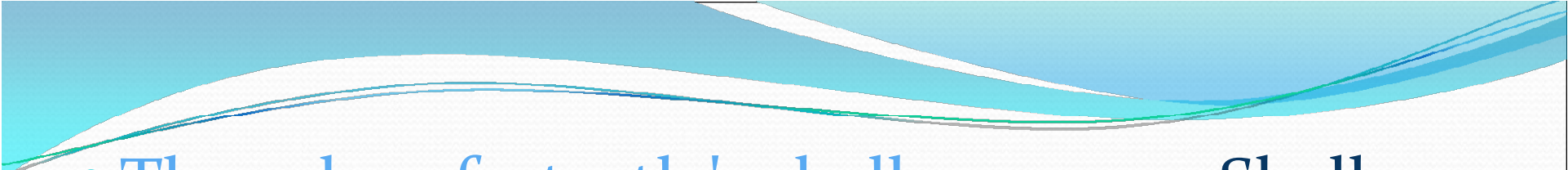
- **carapace**

The upper shell of the turtle is called the carapace.

- **plastron**

The lower shell that encases the belly is called the plastron.

- The carapace and plastron are joined together on the turtle's sides by bony structures called bridges. The inner layer of a turtle's shell is made up of about 60 bones that include portions of the backbone and the ribs, meaning the turtle **cannot crawl out of its shell**.
- In most turtles, the outer layer of the shell is covered by horny scales called scutes that are part of its outer skin, or epidermis.
- the leatherback sea turtle and the soft-shelled turtles have shells covered with leathery skin, **instead**.

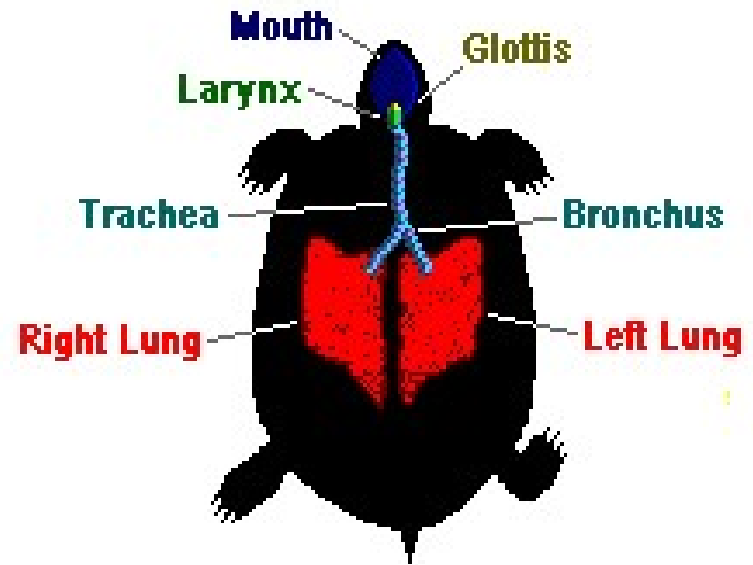
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- The color of a turtle's shell may vary. Shells are commonly colored brown, black, or olive green. In some species, shells may have red, orange, yellow, or grey markings, often spots, lines, or irregular blotches.
 - One of the most colorful turtles is the eastern painted turtle, which includes a yellow plastron and a black or olive shell with red markings around the rim.

Can Turtles Breathe Underwater?

How sea turtles
Breathe in general?

Respiratory system

- ANATOMY
- A turtle's respiratory system extends from the **mouth** to the lungs.



- The **mouth** takes in oxygen, which proceeds past the **pharynx** and through the **glottis**. acts as a barrier between it and the **larynx** and prevents seawater from progressing down into the lungs. After the glottis comes the **trachea**, which leads to the **bronchus**, which divides into **two bronchial tubes** attached to the lungs. Turtles' lungs are above all the other vital organs just beneath the shell.

The glottis

a small opening just past the pharynx



- **BREATHING**

The mouth draws in oxygen, which passes through the system to the lungs. The turtle's other organs press against the lungs when breathing -- acting like a bellows -- and expel carbon dioxide back through the respiratory system. The lungs can be inflated and have oxygen stored for buoyancy or long periods underwater

So they do not have any gills

Lungs

- As air enters the spongy pink lungs, the bronchial tubes break into smaller tubes called bronchioles. They, in turn, become smaller until they end at the alveoli or small air sacs where the exchange of gases occurs. Oxygen absorbs into the blood and carbon dioxide expels.

How do sea turtles breath under water when they do not have any gills????

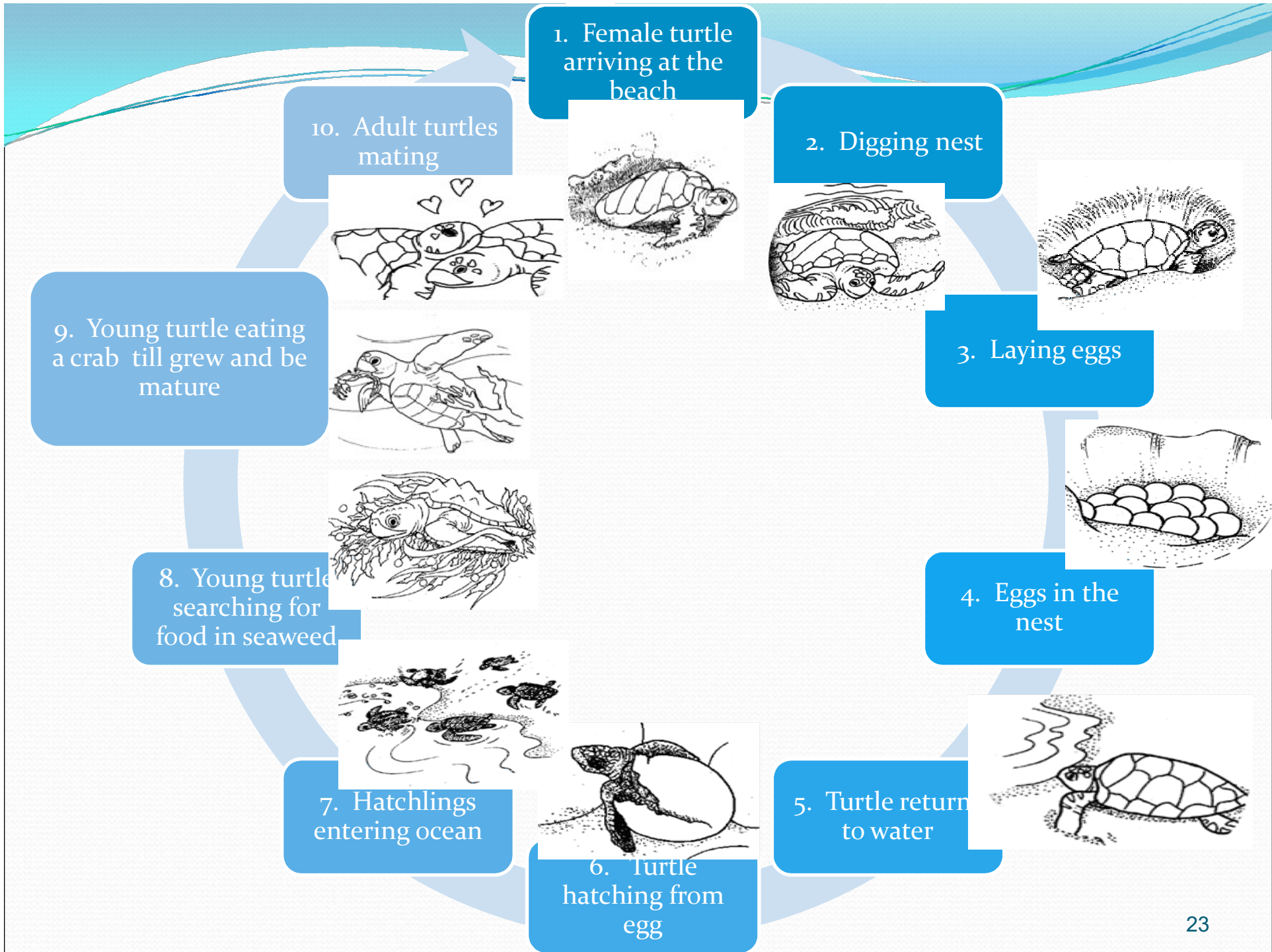
- They don't breathe under water, they are air breathing reptiles that can hold their breath, for very long periods of time up to 5 HOURS is common a loggerhead
- turtle was recently recorded to have stayed under water for 10 HOURS. how long
- can they hold their breath? that's amazing! how do they do that?!?!?!?!.... Turtles
- do not breath under-water, they must come to the surface to get air.

Adaptations

- In emergencies, sea turtles can breathe through the cloaca, a small cavity inside the turtle's head. Leatherback turtles can adjust their breathing rate to recover faster after periods underwater. Leatherbacks and loggerhead turtles have higher levels of hemoglobin and myoglobin that enable them to deliver oxygen more quickly throughout their respiratory system.

Life cycle

- 10. Adult turtles mating
- 1. Female turtle arriving at the beach
- 2. Digging nest
- 3. Laying eggs
- 4. Eggs in the nest
- 5. Turtle returns to water
- 6. new Turtles hatching from eggs
- 7. Hatchlings entering ocean
- 8. Young turtle searching for food in seaweed
- 9. Young turtle eating a crab and grew till maturation
- 10. Adult turtles mating



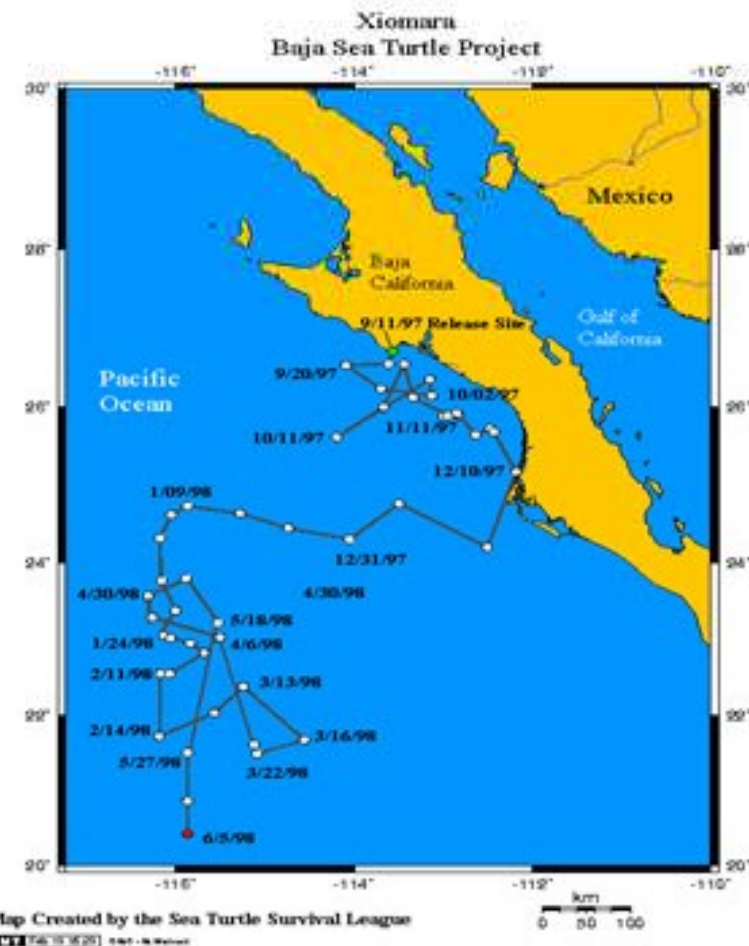
Navigation

- Navigation is finding the way from one location to another.
- What are some ways that people can navigate?



Navigation

- 1. Compass
- 2. Stars
- 3. Position of Moon and Sun
- 4. Maps
- 5. Landmarks
- What are some ways that sea turtles may navigate in the water and on land?



Navigation

- Sight
- Position of the moon
- Wave direction
- Internal compass
(turtles that we know
use this: loggerhead
and leatherback)



Navigation

- So how do you think baby turtles navigate from the nest to the ocean?



Navigation

- 1. Move away from silhouettes at the top of the beach
- 2. Orient themselves toward the brightest light (moon on water in low populated beaches)
- They can sense the direction of waves when in the water
- Some use a magnetic compass.



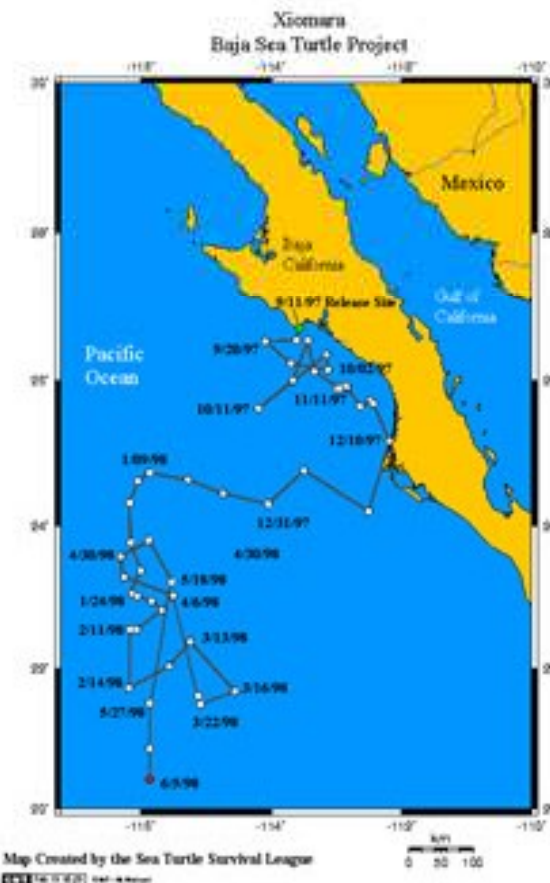
Navigation

- What are some reasons a turtle might have to navigate in the ocean?
- How far do you think turtles may migrate?



Navigation

- Some turtles migrate over 2600 km but most will only travel 1000 km.



Navigation

- They migrate to find:
- food
- mates
- and beaches to nest on



THANK YOU

