The Galápagos giant tortoise (Chelonoidis nigra and related species) is one of the most famous animals of the Galápagos Islands. Indeed, that’s where the name comes from - galápago is old Spanish for “tortoise.”

Giant tortoises live on only six islands now - driven to extinction on others by hunting, habitat destruction and invasive species.

Whalers used to take hundreds of tortoises at a time and stack them upside down on their ships to serve as fresh meat later in the voyage. Over 200,000 tortoises were taken this way before the 20th century.

The Galápagos population bottomed out at a few thousand in the mid-1970s, but has partially recovered to about 20,000 today.

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**Fun Facts**

- Giant tortoises can go up to a year without eating or drinking.
- They are really slow. They walk at .16 mph (for perspective, humans walk at about 3 mph).
- Giant tortoises live over 100 years. One lived over 150 years!

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Lonesome George, the last tortoise originally from Pinta Island, died in 2012.
The marine iguana (*Amblyrhynchus cristatus*) is found only in the Galápagos Islands. It is the only sea-going lizard in the world - it dives in the ocean to forage for algae.

Scientists believe it is descended from the Central American land iguana and adapted to life in the Galápagos Islands by eating algae along the shore, slowly developing diving skills.

**Fun Facts**

- They can dive as deep as 100 ft and stay underwater for up to an hour.
- They expel extra salt (the result of a high-salt diet) by sneezing - thus their heads are often white.
- Males turn partly red during mating season and butt heads to establish dominance.

Marine iguanas are normally black as this helps them absorb heat from the sun.
The Galápagos green turtle (*Chelonia mydas agassisi*) is a sub-species of the green sea turtle and the only turtle that nests in the Galápagos Islands.

Newly hatched turtles race down the beach to the water at night to avoid predators and swim for 24 hours to get away from the shore and to the relative safety of the open water.

Green sea turtles are on the Red List of Threatened Species and are protected by law.

**Fun Facts**

- When the female digs a burrow in the sand to lay her eggs, she sometimes digs a second "fake" burrow to mislead predators.

- Slow on land, they are really fast in the water. They can swim at an incredible 35mph.

- Even though they breathe air, they can sleep underwater for short periods of time.

The turtles have a green shade green due to their algae and seagrass diet.
Darwin mislabeled many of the birds he collected in the Galápagos and did not realize their importance at the time. But once he got back to England and the ornithologist John Gould identified thirteen different species of finch in his collections, he immediately grasped their evolutionary significance.

Descended from the South American finch, each species evolved to exploit a unique food source with a specialized beak.

The large ground finch, for example, has a large, strong beak that can break open large seeds. The small ground finch (with a smaller beak) focuses on smaller seeds - it cannot crack open the larger ones.

Each species zeroed in on a specific niche. One finch eats insects, another cactus flowers. One eats fruit, others only seeds.

Today, Darwin's Finches are closely studied as examples of evolution through natural selection.

Fun Facts

- The woodpecker finch uses a small twig or stick to extract grubs from the holes it drills in trees. It is a rare non-primate tool user.
- The so-called "vampire" finch will peck at the legs of other birds, drawing blood and drinking it. Why other birds put up with this is not fully understood.
- The Galápagos finches are part of the Tanager family, and are not closely related to true finches.

The medium ground finch (Geospiza fortis).
Although the Galápagos sit on the equator, the water is cold because the Humboldt Current brings Sub-Antarctic water up the west coast of South America to the islands.

Galápagos penguins live nowhere else in the world and are seriously endangered. There are fewer than 1,500 left in the wild.

El Niño events have a significant impact on the penguins, as food becomes scarce and reproductive rates fall sharply.

**Fun Facts**
- The equator cuts through Isabela, so some of the penguins actually live in the Northern Hemisphere, the only penguins to do so.
- On land, they use their flippers to shade their feet which heat up quickly in the sun.
- They are the second smallest penguin (the smallest is the "little penguin" found in Australia and New Zealand).
The blue-footed booby (Sula nebouxii) is clumsy on land, but they know how to catch fish. They nose-dive from 100 feet up, hit the water at 60 mph like a missile and go as deep as 80 feet to snag a meal.

Males attract females by showing off their feet in a sort of soft-shoe dance. Foot color is a sign of health and females prefer males whose feet are the brightest blue.

Fun Facts

- They are a noisy bunch. They are always grunting and males are known to throw up their heads and whistle at females flying by.
- There is a red-footed booby, too.
- Booby comes from the Spanish "bobo," which means foolish.
The Galápagos sea lion (*Zalophus wollebaeki*) lives only in the Galápagos and on Isla de la Plata (off the coast of Ecuador).

Sea lions are friendly and curious and this gets them into trouble as they get caught in nets, entangled in gear and hit by boats.

They form colonies where they come ashore. One bull rules the group and the surrounding territory.

### Fun Facts

- A large bull can reach 7 feet in length and weigh up to 800 lbs.
- Sea lions make a sound very similar to a dog's bark.
- Sea lions are heavily impacted by El Niño events when food is scarce.
Whale sharks (*Rhincodon typus*) can grow up to 60 feet in length and weigh 30 tons. Fortunately, they are filter-feeders.

They take in large amounts of water through their very large mouths and filter out plankton, krill and other small marine organisms.

They are found throughout open tropical waters and can be seen from June to December around the northern islands of Wolf and Darwin in the Galápagos.

### Fun Facts

- The whale shark is the largest animal in the world that is not a whale (it is a shark!).
- It is believed the whale shark lives up to 100 years.
- Whale sharks have never been observed mating or pupping. Not much is known about this giant of the ocean.

The whale shark is a gentle giant and divers can often get very close.
The Sally Lightfoot crab (*Grapsus grapsus*) is reputedly named after a Caribbean dancer due to its agility.

One of the most colorful denizens of the Galápagos, the Sally Lightfoot is almost impossible to catch. It can seemingly move in any direction instantaneously. John Steinbeck wrote, "If you walk slowly, they move slowly ahead of you...If you hurry, they hurry. When you plunge at them, they seem to disappear..."

### Fun Facts

- *Grapsus grapsus* was one of the specimens collected by Charles Darwin when he visited the Galápagos Islands in 1835.
- They carry water in their shells to pour over their gills so they can breathe on land.
- It can poke its pointed legs into tiny holes in the lava to hold on when waves hit.

![The Sally Lightfoot Crab in full color.](image)
Peter and Rosemary Grant: Research on Daphne Major

Peter and Rosemary Grant spent forty years (1973-2013) studying the finches on the island of Daphne Major, a small island just north of Santa Cruz. Climate changes (droughts, El Niño events, etc.), affect vegetation on Daphne Major and therefore the food supply.

When new conditions arise they favor certain characteristics—like a certain beak size. As a result, some individuals have an advantage and have more offspring, and the optimal beak size becomes more prevalent throughout the population as it is passed on through genes.

Over the years, the Grants caught and tagged 20,000 finches spanning eight generations, tracking them year after year, recording weight, beak size, wingspan, and recording familial relationships.

What they discovered was totally unexpected: They could literally see evolution in action.

The Grants were able to observe such changes year-to-year. Natural Selection moves fast on Daphne Major.

Changes that were once thought to take generations took place over a year or two. A popular account of the Grants' work, The Beak of the Finch, by author Jonathan Weiner, won the Pulitzer Prize.
Not just Tortoises are in Trouble

The Mangrove finch, which lives only on the Island of Isabela, is one of the rarest birds in the world. Less than 100 individuals survive.

A combination of rats (which eat their eggs) and a new type of parasitic fly (*Philornis downsi*) that attacks the chicks, threaten the tiny population.

In 2019, field biologists from the Charles Darwin Foundation and the National Galapagos Park Directorate stepped in to help.

The field staff work year round to control the rat population, but during breeding season they take extra steps to protect the chicks.

Staff locate the nests and inject a natural pesticide into the base to kill the fly larvae.

Though there are a hundred individuals, there were only ten breeding pairs in 2019, so every chick counts.

Through the efforts of the field staff, five new chicks 'fledged' (reached the stage they were able to fly). The Galapagos is a delicate ecosystem and now and then it needs a helping hand.
Even the Islands are Evolving

The Galápagos Islands were formed by volcanoes over millions of years—and they're not done.

The islands sit atop a "hot spot," a place where Earth's mantle has created a 'plume' that penetrates into the plate above (see diagram below). The plume creates a volcano and hence an island.

The hot spot does not move—it is part of the mantle—but the plate above it does. As a result, the island moves away in the direction of the plate. In the case of the Galápagos, the islands move eastward with the Nazca plate toward South America.

As the islands move away they erode due to wind and rain and become flatter, and a new island is created over the hot spot by the plume. Ultimately, a series of islands results.

The islands closest to South America are the oldest. San Cristóbal, for example, is estimated to be over 3 million years old, while the newest island, Fernandina, is less than 700,000 years old.

The Hawaiian Islands were formed in a similar fashion.