



Turtle Guardians



Photo: Shawn Hill

Turtles – the Earth’s Heroes of Biodiversity

Before we talk turtles, we need to understand what biodiversity is and why it is important for us:

Biodiversity refers to the variety of life that is found in an area, a region, or on the Earth as a whole. Biodiversity includes all living things from plants and animals, to fungi, and all the way down to tiny microorganisms!

We live in ecosystems: Ecosystems are communities of organisms interacting with each other and their environment. Ecosystems contain many natural resources and diverse wildlife that provide humans with essential products and services. These products and services are irreplaceable and cannot be provided or recreated by humans. Some examples are: services of water filtration; pest control; nutrient and pollution filtration; pollinators that support the growth of foods; and even agents that spread seeds are found in nature. These processes and species ensure that biodiversity continues. In ecosystems we also find sources of food, medicines and even our building materials. Finally, from star-gazing, to recreational activities, our mental and spiritual health also benefits from nature.

How do ecosystems operate? Ecosystems rely on a



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cycle of nutrients that is driven by the amount or the level of biodiversity that exists within them. In fact, biodiversity is essential to how productive and resilient each ecosystem will be.

For example, how fertile the soil is in an area is determined by the amount of microbes and fungi found there, which is then determined by how rich and productive the plants are, and the plant life helps and is helped by all the birds, fish, turtles, and other animals found there, and so forth. So it is all connected! The health and variety of wildlife, the quality of our water, air, food and life really relies on the the diversity of all living nature interacting together.

Everything is so connected that the loss of just one species can result in the collapse of a whole ecosystem. One way to look at- when we remove a plant, bug, animal from an area, it is like removing blocks from a Jenga tower. The tower may not collapse right away but it has become weaker and could collapse when another block (species of plant, bug, or animal) is removed. Today, we have removed too many blocks! We humans have changed so much of the world's ecosystems. We have transformed the landscapes by removing or relocating species partially or sometimes entirely. "Shaving" so much of the earth's surface clean, even in your own backyard, has changed many essential processes. Removing native plants and trees, hardening surfaces, installing artificial lights at night and spraying insecticides, have all reduced biodiversity on a global scale, and have even contributed to the increase of the overall surface temperature of the Earth.

The results are huge losses of species that have depended on the natural processes and nutrient cycles within an ecosystem. The local losses may still be small, but they have become thousands across the world and in every landscape, putting the earth on the course to a sixth mass extinction. A mass extinction is defined as a loss of more than three-quarters of the Earth's species in a relatively short time period. So life as we know it is at risk.

Why turtles are our heroes

We can take small deliberate actions to change and restore biodiversity- and that's exactly what many people are doing in their homes, yards, neighbourhoods and communities! And one very important way you can help biodiversity is by helping our wild turtles!

Turtles are one-of-a-kind vertebrates that have incorporated a shell into their skeleton. A turtle's shell is made up of a fused rib cage and spine which has remained relatively unchanged for **nearly 200 million years!** Turtles were likely here before all the dinosaurs, they certainly have outlived the dinosaurs and they survived five mass extinctions.



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Not only do turtles have a distinct skeleton and body shape, but they also have a very unique lifestyle. One very important characteristic is that turtles have aquatic AND terrestrial territories. Turtles have incredible navigation abilities, and using chemicals in their brain as well as the sun, they travel between many habitats and ecosystems following very specific routes. They always know exactly where they are going! It's not only where turtles go that is important, but what they are doing there, carrying and delivering!

Many turtles are scavengers and get their nutrients by eating dead things from the bottom of waterbodies, in addition to eating small living plants and animals. In the lakes, rivers, ponds and wetlands that they occupy, they are effectively the cleaning crew, removing sources of harmful bacteria. This "nutrient" cycling keeps all of the living things in those ecosystems, including us, healthy. Because turtles travel between both aquatic and terrestrial ecosystems they are a major source of energy transfer between the two. Turtles' diets and unique digestive systems means that they carry and deliver the seeds, bacteria and nutrients from one habitat to another. They essentially leave the gift of restoration. Turtles help new plants grow and ecosystems thrive; they bring new seeds and the necessary plant fertilizers across wide expanses as they travel between ecosystems, through their droppings!



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But turtles are not just any harbingers of biodiversity: Turtles, and vertebrates in general, retain a large proportion of nutrients, specifically nitrogen and phosphorus, in their bones. Nitrogen and phosphorus are essential nutrients needed by plants for their growth. Because turtles have such a long life span and grow slower and slower as they age, adult turtles no longer use these nutrients for bone growth; instead, they become stable sources of large supplies of essential nutrients. The extra nitrogen and phosphorus that they get from the environment then gets carried and dropped off as they travel through their territories! For the seeds they leave behind, and the other plants in that habitat, turtles leave a trail of healthy and enriched biodiversity wherever they go!

Despite being on the planet for eons and surviving mass extinctions, turtles are now at risk of disappearing too. Mortality from cars on roads, misinformed persecution (dangerous, threat to fish populations, etc.), and removal of turtles from their natural territories and environment, are all threatening the future of our heroes. When any turtle species disappears from an ecosystem, a very large role, that cannot be filled by any other creature is left. Become a turtle guardian in your community! Watch out for them on roads, keep them in lakes, and spread the word.

There are so many reasons to love turtles, and a healthy environment is just one of them, let's try and keep these guys around for as long as possible! For more information on how to help, check out the Turtle Guardians website! www.turtleguardians.com



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