Sharing the Planet

MYSTERY BOX PHOTOGRAPHS

BEAVERS

TREE WITH BEAVER MARKINGS

Beaver

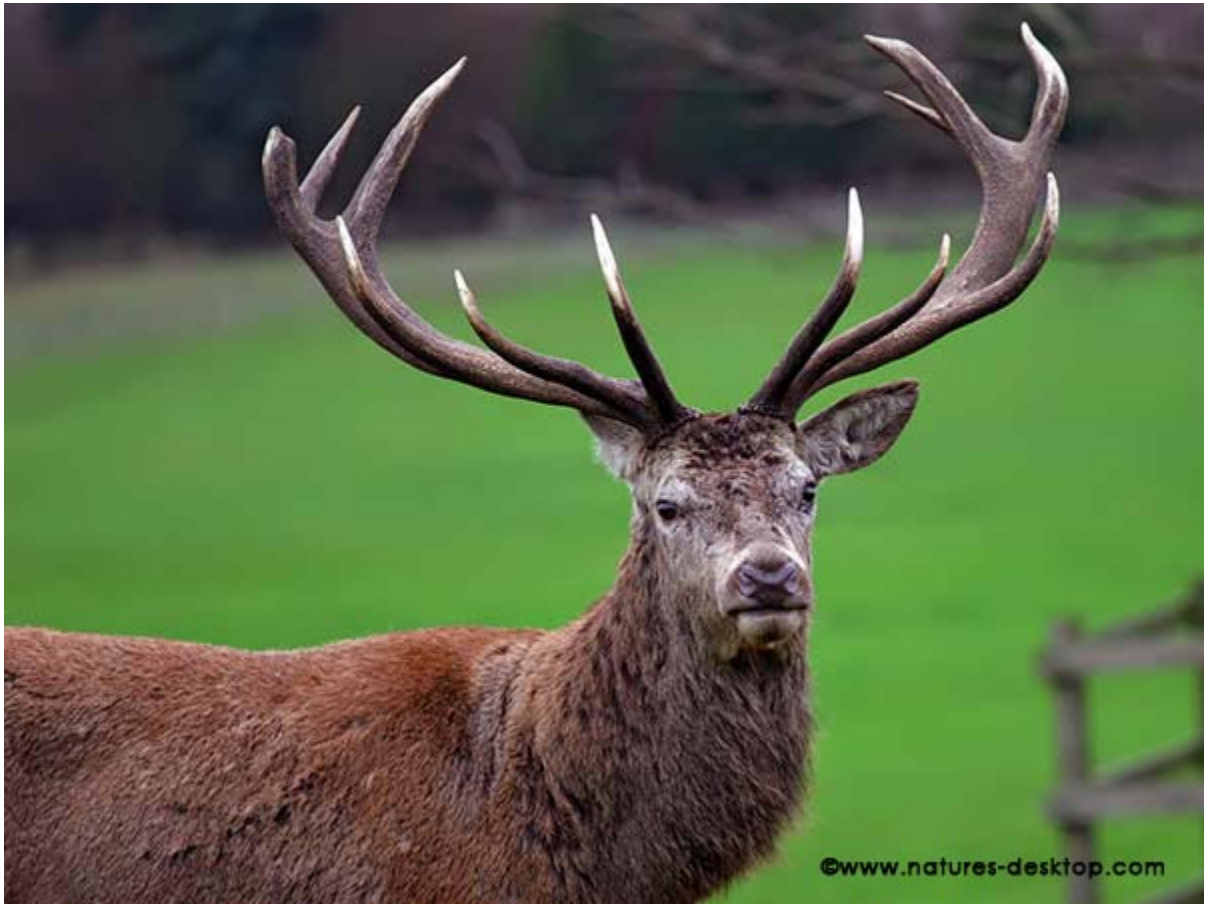
- The beaver is semi-aquatic. The beaver has many traits suited to this lifestyle. It has a large flat paddle-shaped tail and large, webbed hind feet reminiscent of a human diver's swimfins. The unwebbed front paws are smaller, with claws. The eyes are covered by a nictitating membrane which allows the beaver to see underwater. The nostrils and ears are sealed while submerged. A thick layer of fat under its skin insulates the beaver from its cold water environment.
- Scent glands secrete an oily substance known as castoreum, which the beaver uses to waterproof its fur.
- They are able to remain submerged for up to 15 minutes. They use their flat, scaly tail both to signal danger by slapping the surface of the water and as a location for fat storage.

HORSE

Horse Teeth

- Horses are adapted to grazing. In an adult horse, there are 12 incisors at the front of the mouth, adapted to biting off the grass or other vegetation. There are 24 teeth adapted for chewing, the premolars and molars, at the back of the mouth. Stallions and geldings have four additional teeth just behind the incisors, a type of canine teeth called "tushes". Some horses, both male and female, will also develop one to four very small vestigial teeth in front of the molars, known as "wolf" teeth, which are generally removed because they can interfere with the bit. There is an empty interdental space between the incisors and the molars where the bit rests directly on the gums, or "bars" of the horse's mouth when the horse is bridled.[62]
- An estimate of a horse's age can be made from looking at its teeth. The teeth continue to erupt throughout life and are worn down by grazing. Therefore, the incisors show changes as the horse ages; they develop a distinct wear pattern, changes in tooth shape, and changes in the angle at which the chewing surfaces meet. This allows a very rough estimate of a horse's age, although diet and veterinary care can also affect the rate of tooth wear.[6]

Antler



Antler

- Each antler grows from an attachment point on the skull called a pedicle. While an antler is growing, it is covered with highly vascular skin called velvet, which supplies oxygen and nutrients to the growing bone.[6] Antlers grow faster than any other mammal bones. Growth occurs at the tip, and is initially cartilage, which is mineralized to become bone. Once the antler has achieved its full size, the velvet is lost and the antler's bone dies. This dead bone structure is the mature antler. In most cases, the bone at the base is destroyed by osteoclasts and the antlers fall off at some point.[
- In most arctic and temperate-zone species, antler growth and shedding is annual, and is controlled by the length of daylight.
- Antlers function as weapons in combats between males, which sometimes cause serious wounds, and as dominance.

Bird Nest

Bird Nest

- Birds build nests. In the nests, they lay their eggs and raise their nestlings. If you see an empty bird nest, you might not know which bird it belongs to but you have evidence that birds are in the area!

- Birds construct a wide range of nests, from simple scrapes on the ground to elaborately woven nests of sticks and grasses. Some are camouflaged and some are out in the open. Some are big and some are small. It all depends on the bird, and where and how it lives!

Bee Hive

Bee Hive

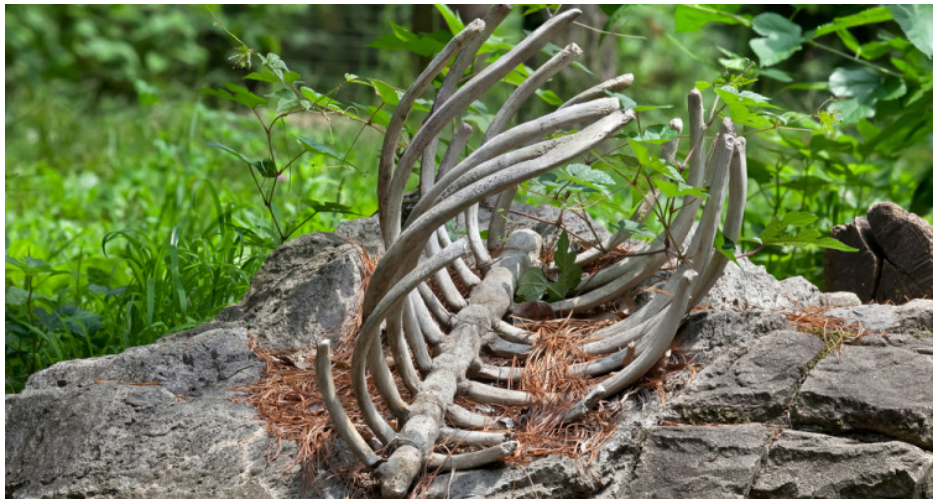
- There are three kinds of bees in a hive: Queen, Worker and Drone.
- The bees use their honeycomb cells to raise their babies in, and to store nectar, honey, pollen and water.
- A beehive in summer can have as many as 50,000 to 80,000 bees. A bee must collect nectar from about 2 million flowers to make 1 pound of honey. It requires 556 worker bees to gather a pound of honey. Bees fly more than once around the world to gather a pound of honey.
- The worker bees are all female and they do all the work for the hive. Workers perform the following tasks inside the hive as a House Bee: Cleaning, feeding the baby bees, feeding and taking care of the queen, packing pollen and nectar into cells, capping cells, building and repairing honeycombs, fanning to cool the hive and guarding the hive.

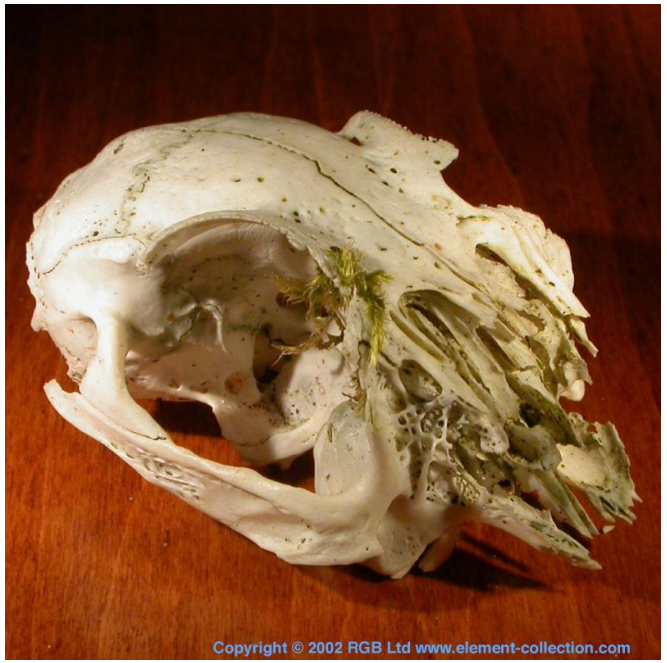
Turtle Shell

Turtle Shell

- Turtles have a hard shell that protects them like a shield, this upper shell is called a ‘carapace’.
- Many turtle species (not all) can hide their heads inside their shells when attacked by predators.
- Turtles also have a lower shell called a ‘plastron’.
- A turtle’s carapace, or upper shell, is flatter to help them swim while a tortoises’ carapace is higher and dome-shaped.
- A turtle’s shell is attached to their body. Turtles do not look for a bigger shell as they get bigger, instead the shell grows with the turtle.

Skeletons





Skeletons

- Some animals have a backbone. Some do not.
- Backboned animals have a hard body frame inside them - their skeleton.
- You are a **mammal**. You have a bony skeleton. Your skeleton grows with you.
- The animals known as **vertebrates** make up the animals we call mammals, fish, birds, reptiles, and amphibians. Each of these animals has a backbone and a skeleton. Birds have bones that are hollow - this makes the bones lighter for flight.
- While vertebrates all have skeletons to give their bodies shape and support, **invertebrates** have no bones. Many of the invertebrates have an **exoskeleton** or a hard outer shell as their skin to act like bones do.
- Insects, crabs, lobsters, and shrimp are a few of the creatures with exoskeletons. Other invertebrates are soft like the octopus, squid or earthworm.

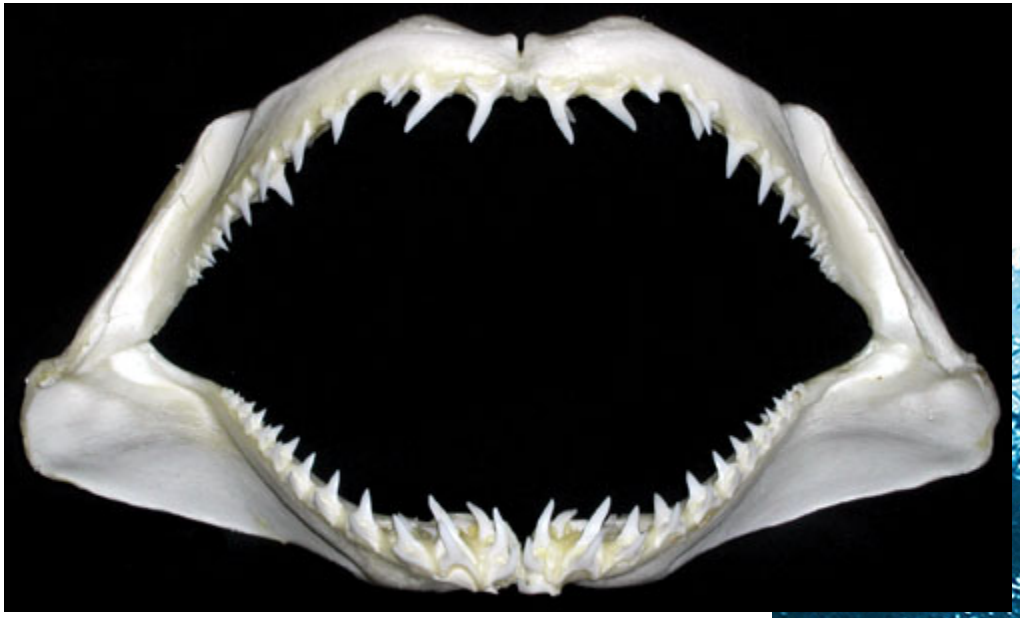
Butterfly

Butterfly

- One of the most incredible things about butterflies is the way they change from crawling caterpillars into winged beauties. There are four steps in becoming a butterfly: egg, caterpillar, pupa, and adult. This process is called metamorphosis, which comes from the Latin words for "changing shape."
- An adult female lays her eggs on a plant. When the egg hatches, a small caterpillar crawls out and eats the eggshell, then it begins eating the plant. Caterpillars are basically munching machines. This is the stage when most of the eating and growing happens. The caterpillar's insides grow, but not its outside—when it gets too big for its skin, the covering splits and is shed. A new exoskeleton lies underneath. A caterpillar sheds its skin 5 times, then becomes a pupa.
- The last time the caterpillar sheds, a hard casing called a chrysalis forms around its body. Inside the chrysalis, big changes are happening. The pupa is growing six legs, a proboscis, antennae, and wings. After 10 to 15 days, the chrysalis breaks open and a butterfly emerges. At first its wings are wet and crinkled, but after about an hour, they are straight, dry, and strong enough for the butterfly to flutter away.

- **Area: All continents except Antarctica**
- **Food: Caterpillars eat leaves; butterflies sip nectar, sap, and juices from fruit**
- **Size: From less than 1 inch to about 11 inches across, depending on the species**

Shark Jaw



Shark Jaw

- Sharks have the most powerful jaws on the planet. Unlike most animals' jaws, both the sharks' upper and lower jaws move.
- A shark bites with it's lower jaw first and then its upper. It tosses its head back and forth to tear loose a piece of meat which it swallows whole.
- Sharks don’t have a jaw that is attached to their skull. Instead it moves as separate piece. The upper and the lower jaw can work on their own without the other moving. This allows the shark to have a very powerful pull and to be able to latch onto what it wants fiercely.

Pine Cones

Pine Cone

The familiar woody cone is the female cone, which produces seeds. The male cones, which produce pollen, are usually herbaceous and much less conspicuous even at full maturity.

The **male cone** is structurally similar across all conifers, differing only in small ways (mostly in scale arrangement) from species to species. Extending out from a central axis are **microsporophylls** (modified leaves). Under each microsporophyll is one or several **microsporangia** (pollen sacs).

The **female cone** contains ovules which, when fertilized by pollen, become seeds. The female cone structure varies more markedly between the different conifer families, and is often crucial for the identification of many species of conifers.

Pig Femur

Mystery Jar

- **Form**: What could it be?
- **Form**: What does it look like?
- **Function**: What do you think it was used for?

SHARING THE PLANET

An inquiry into rights and responsibilities in the struggle to share finite resources with other people and with other living things; communities and the relationships within and between them; access to equal opportunities; peace and conflict resolution.

Lines of Inquiry

- Adaptations of living things within ecosystems (Causation)
- Interactions and relationships among living things (connection)
- Stages and development of life cycles (change)

Central Idea

Survival depends on the relationships between living things and their environment.