Fossils Loan Box

Information

The fossils in this box are primarily examples that can be found in Sussex with a few extras from Scotland or USA.

The chalk and flint is the common geology in the South Downs area.

100 million years ago, the remains of tiny marine organisms which had hard parts formed of calcium carbonate accumulated at the bottom of the sea forming a muddy calcareous ooze. Some of these organisms are tiny animals known as Foraminifera or coccoliths. Over time, they compacted and changed into chalk. Subsequent earth movements have raised this up in places as land which forms the South Downs.

Flint, like quartz and opal, is a variety of silica. It is made of a mass of tiny, compacted crystals that absorb light which is why flint appears black, dark brown or grey. Most flint has a thin outer crust or cortex which is usually white. The mineral matter that flints are formed from comes from the skeletons of sponges which lived in the seas in which the Chalk was being deposited about 100 million years ago. Most sponges have skeletons that contain rods of silica, when the sponges died, they were deposited on the sea floor and mixed into the chalk mud which also buried complete skeletons of rigid sponges. Whilst the chalk mud was hardening into rock, the silica rods dissolved and formed into flint in nodules or in thin layers. Some of the undissolved sponge skeletons also turned into flint assuming the shape of the sponge.

Contents

Image	Name	Facts
	Orthoceras	• Orthoceras was an ancient mollusk that lived more than 400 million years ago. Orthoceras is the ancestor of Ammonites and squids. • These straight shelled nautiloids ranged in size from less than a centimeter to more than 14 feet long! • All the living relatives of these nautiloids, squid, octopus, cuttlefish, and nautilus are predators, and we can assume that orthoceras was also a hunter of the Paleozoic seas, possibly having trilobites for breakfast!

	Ammonite	• These creatures lived in the seas between 240 - 65 million years ago, when they became extinct along with the dinosaurs • Related to the living Nautilus • Their name is derived from The Egyptian God Ammon. Ammon's sacred animal was a ram, and an ammonite looks like a ram's horn. • The ammonite's shell was divided into chambers separated by walls known as septa (singular septum). These strengthened the shell and stopped it from being crushed by the external water pressure. Ammonites could probably not withstand depths of more than 100 metres. • The ammonite lived in only the last chamber, the body-chamber; earlier ones were filled with gas or fluid which the ammonite was able to regulate in order to control its buoyancy and movement, much like a submarine.

 		
	Crinoid	• Crinoids are an ancient fossil group that first appeared in the seas of the Middle Cambrian, about 300 million years before dinosaurs. • lived attached to the bottom, of the sea and filtered food particles from the currents flowing past them. • Could grow over a metre long

	Squalicorax Shark	• SKWA-lih-CORE-ax • Squalicorax (Greek for "crow shark") • About 15 feet long and 500-1,000 pounds • Evidence has been adduced of Squalicorax attacking (if not actually eating) the fierce mosasaurs and plesiosaurs of the late Cretaceous period, as well as turtles and giant-sized prehistoric fish. • Lived 70-80 million years ago
	Mammoth bone with cut mark	• The Tusks of the Woolly Mammoth Were Up to 15 Feet Long • Woolly Mammoths Were Hunted by Early Humans • The word 'mammoth' comes from two words from the Estonian language: 'maa,' which means earth, and 'mutt,' which means mole. • Diet — Mammoths where herbivores. They ate leaves, bushes, willow, and fir. They might have used their tusks to clear snow. They probably ate about 700 pounds of grass and leaves each day.

		• Life Span — Between 60 and 80 years. • Scientists can work out a woolly mammoth's age from the rings of its tusk in a similar way to judging a tree's age from its rings.
	Echinoid	Their name derives from the Greek 'echin' ('spiny'), referring to their protective spines and presumably 'ooid' (egg-like) in reference to their globular shell, or test as it is known. Echinoids are part of a much larger group of animals known as the Echinoderms ('spiny-skins'), which also includes the Asteroids (starfish), Holothurians (sea cucumbers), Crinoids (sea lilies and feather stars) and the Ophiuroids (brittle stars). Echinoids appeared in the Ordovician (around 450 million years ago (mya) but were not very successful at first and other groups such as crinoids dominated the Palaeozoic. By the beginning of Mesozoic (250 mya) many of the earlier echinoderm groups were extinct or in decline and the Echinoids rose to abundance. They diversified through the Jurassic (210-145 mya) and have remained successful ever since.

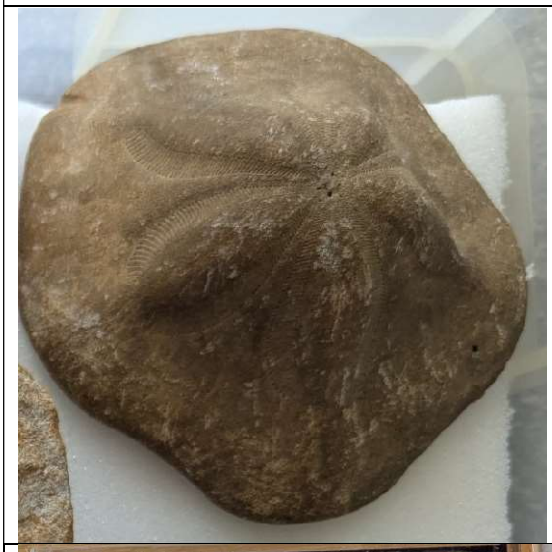
	Plesiosaur	• The plesiosaurus was one of the largest aquatic animals and lived between 205 and 65 million years ago • It grew up to twenty three meters long, making it among some of the largest sea creatures. • The plesiosaurus had very strong jaws, and ate squid like animals along with giant mollusks • Many people have theorized that the modern day loch ness monster, along with many other myths is modern day plesiosaurs. • Plesiosaurs varied greatly in size, the adults varying between 10 feet (3 meters) and 66 feet (20 meters) in length,

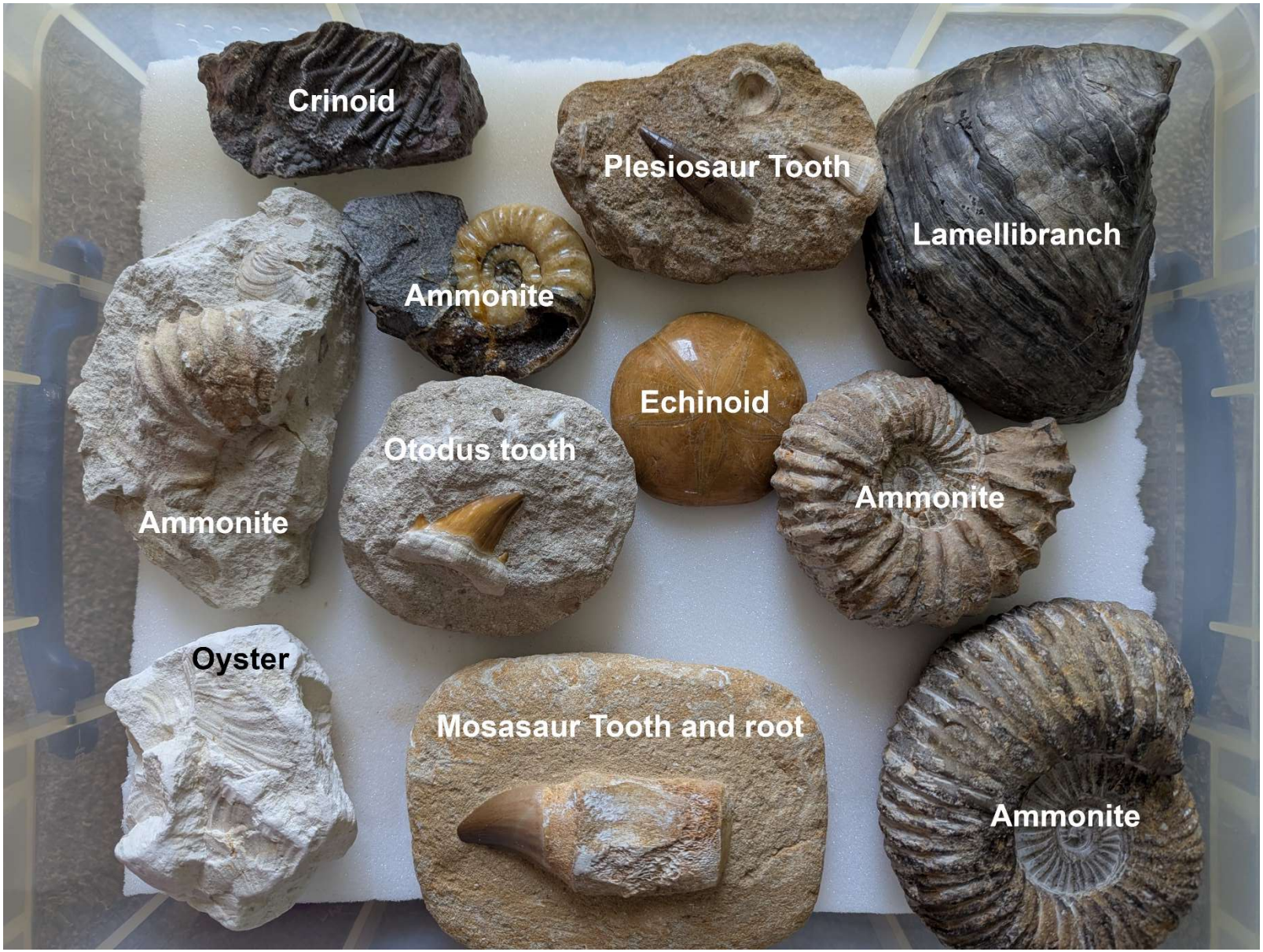
	Mosasaur	• 14 – 15 metres long • a 50-foot mosasaur would have weighed around 5000 kg (5.5 tons). Something that big would have really struggled to pull itself ashore to give birth. So like many oceanic animals, it gave birth beneath the waves. • Late Cretaceous, 85-65 million years ago • Their diet consisted of slow moving animals like ammonites, birds and turtles but they would also tackle larger and swifter prey, such as sharks and plesiosaurs, when the opportunity arose. •
	Otodus	• Lived 60 – 45 million years ago • O-toe-dus • Otodus was still bigger than any other carnivorous fish in the sea today, being one and half times bigger than the largest recorded great white shark • The name Otodus comes from Greek ὠτ (oûs "ear") and ὀδούς, "odous (tooth)", or "ear-shaped tooth". • Otodus likely preyed upon marine mammals, large bony fish, and other sharks. It was

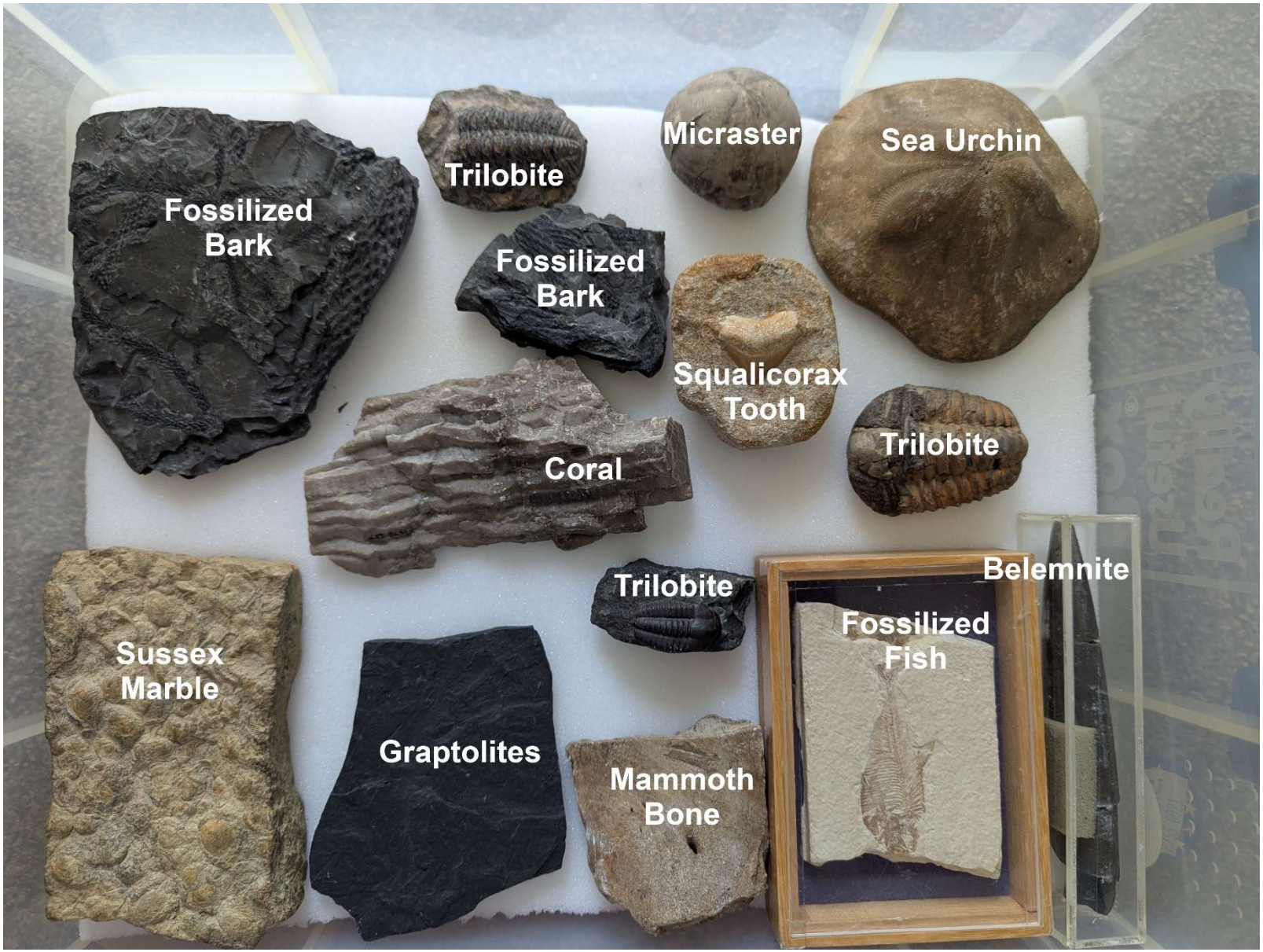
		among the top predators of its time. • Ancestor of MEGALODON!
	Micraster	• Lived around 85 million years ago • Micraster lived in a burrow below the sediment surface • Now found in chalk
  	Trilobite	A trilobite is form of invertebrate marine life that lived more than 550 million years ago, but are now extinct. These hard-shelled prehistoric critters roamed the sea floor and coral reefs in search of food. They all lived in the sea: some burrowed in the mud, some crawled on the surface of the seabed and others swam about in open water or inhabited reefs. Although some types of trilobites were blind, most had well developed eyes with very sophisticated lenses that had a great depth of field. Some species had eyes on stalks and these are believed to have buried themselves in the mud, with only their eyes sticking out like periscopes.

	Lamellibranch	The cast of a shellfish ‘Exogyra Latissima’ preserved in greensand in Kent. The oyster and mussel are living examples of this type of animal which was a bivalve. It lived in shallow temperate seas alongside corals, sponges and lobsters in the lower cretaceous period 140 million years ago.
	Sussex Marble	Section of a bed formed by countless limestone shells of the freshwater snail Viviparus. When this stone was formed in the Jurassic period 150 million years ago, there was a mild climate all over the earth and plant life was similar to now. There were grasshoppers, flies, ants and beetles on land and the first frogs had appeared.
	Coral	This coral is fossilised in limestone and came from warm shallow seas rich in lime and teeming with life such as sea urchins, starfish, sponges and sharks during the Lower Carboniferous period 350 million years ago.
	Graptolites	These were small aquatic animals that lived in deep water and fed on plankton by filter feeding during the Ordovician period 470 million years ago. This one was found in Scotland Graptolites were extremely adaptable creatures, evolving into distinct species at particular times, meaning that their fossils

		can be used to date surrounding rocks fairly precisely. Not only this, but they can also be used to estimate both water depth and temperature.
 	Fossilized Bark	This is a portion of bark from the evergreen lepidodendron tree showing the gaps left by leaves. This tree is also known as the Scale Tree because the bark looks like scales and were over 30 metres tall and had a large crown of branches covered in small leaves and cones. They grew in warm swamp forests of Britain in the Upper Caboniferous period 300 million years ago and commonly fossilized in coal seams – this one was found in Lancashire.
	Belemnite	An internal guard preserved in calcite. These marine cephalopods, related to the squid, cuttlefish and octopus of the present day, had their shell-guard inside the body. The soft parts of the head and tentacles rarely survive as fossils. Great numbers of them swam by jet propulsion in the shallow muddy waters and were preyed upon by

		the aquatic reptiles which dominated life in the sea during the Jurassic period 150 million years ago.
	Sea Urchin	This fossil is of the ‘cake urchin’ (Clypeaster Elutherozoa) which was common on the sandy sea bed amongst a variety of fish, including many large sharks during the Miocene period 18 million years ago. On land the climate was mild and damp with deciduous trees and grassy plains where early types of todays animals and birds lived.
	Fish	Fossilized fish from the sandstone of Wyoming which was laid down when great earth movements were raising the seabed and shaping the continents as we know them during the Eocene period 60 million years ago. Mammals roamed tropical Britain and the ancestors of the horse, monkey and elephant appeared.


Crinoid
Plesiosaur Tooth
Lamellibranch
Ammonite
Echinoid
Otodus tooth
Ammonite
Ammonite
Oyster
Mosasaur Tooth and root
Ammonite


Fossilized Bark
Trilobite
Micraster
Sea Urchin
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Squalicorax Tooth
Trilobite
Coral
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Belemnite
Fossilized Fish
Sussex Marble
Graptolites
Mammoth Bone