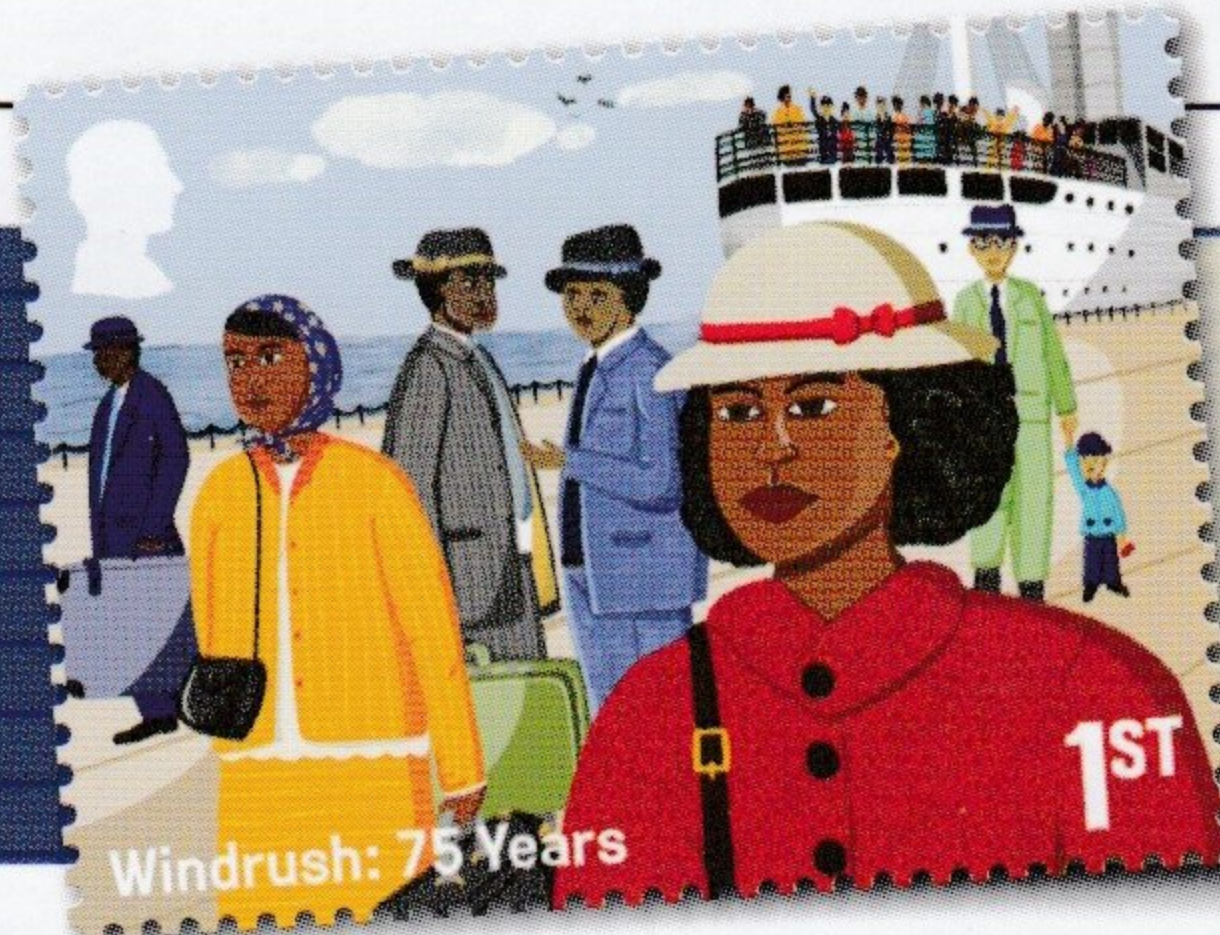


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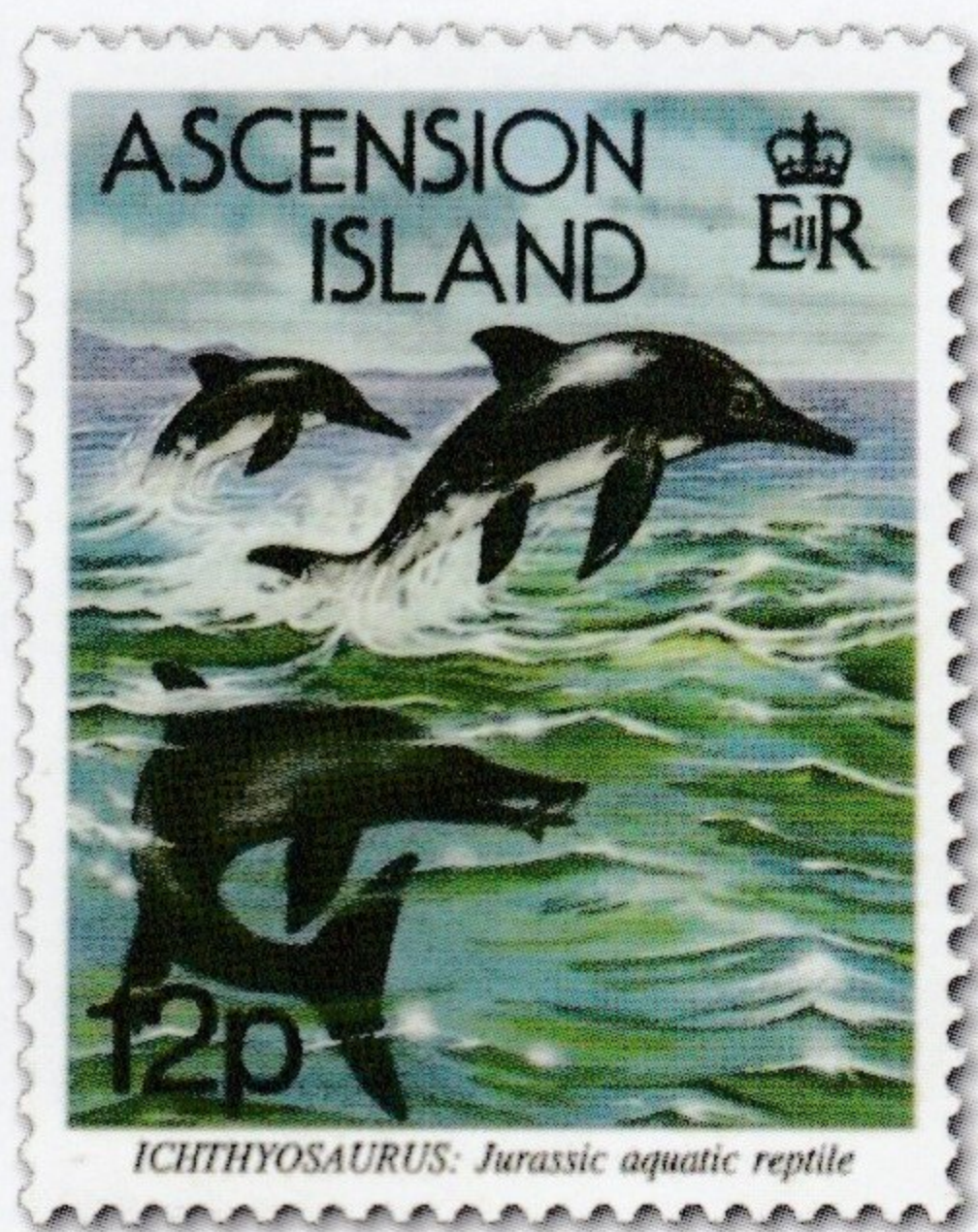


The amazingly varied postal history of a low value that came in many guises

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Ichthyosaurs

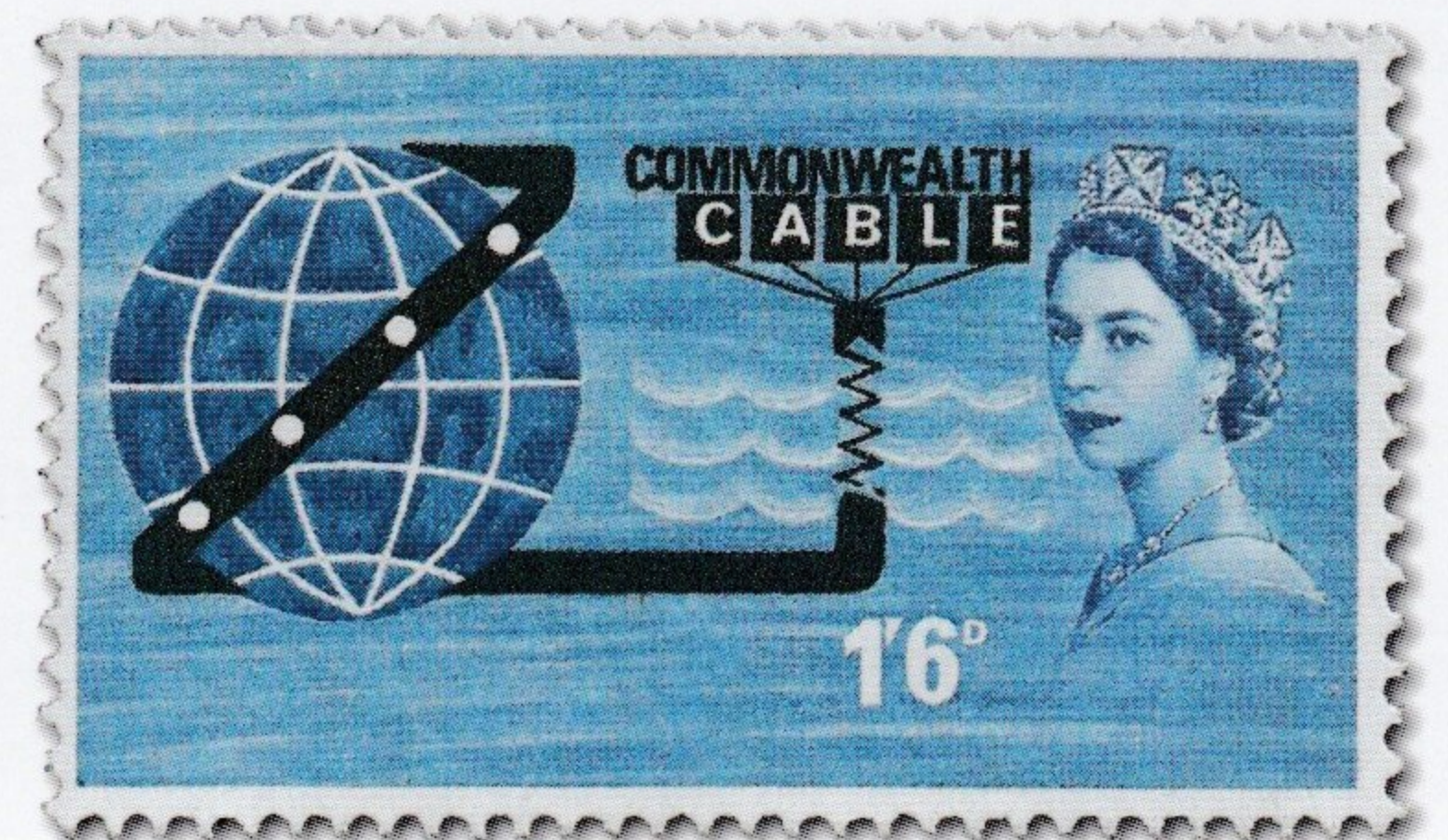
Marine reptiles that were more than simply prototype dolphins



■ Why a Japanese rarity sold for £3.75m

■ The key questions for any new collector to resolve

Down under Australia's influence on the Compac issue



Fish-lizards

They've been extinct for 90 million years, but that hasn't stopped ichthyosaurs making an impact on philately. What is it about these marine reptiles that fascinates us?

■ Report by Michael Kogan

Prehistoric animals are among the most popular collecting themes, and so they should be. Some species thrived for millions of years, which is much longer than *homo sapiens* has managed, so far.

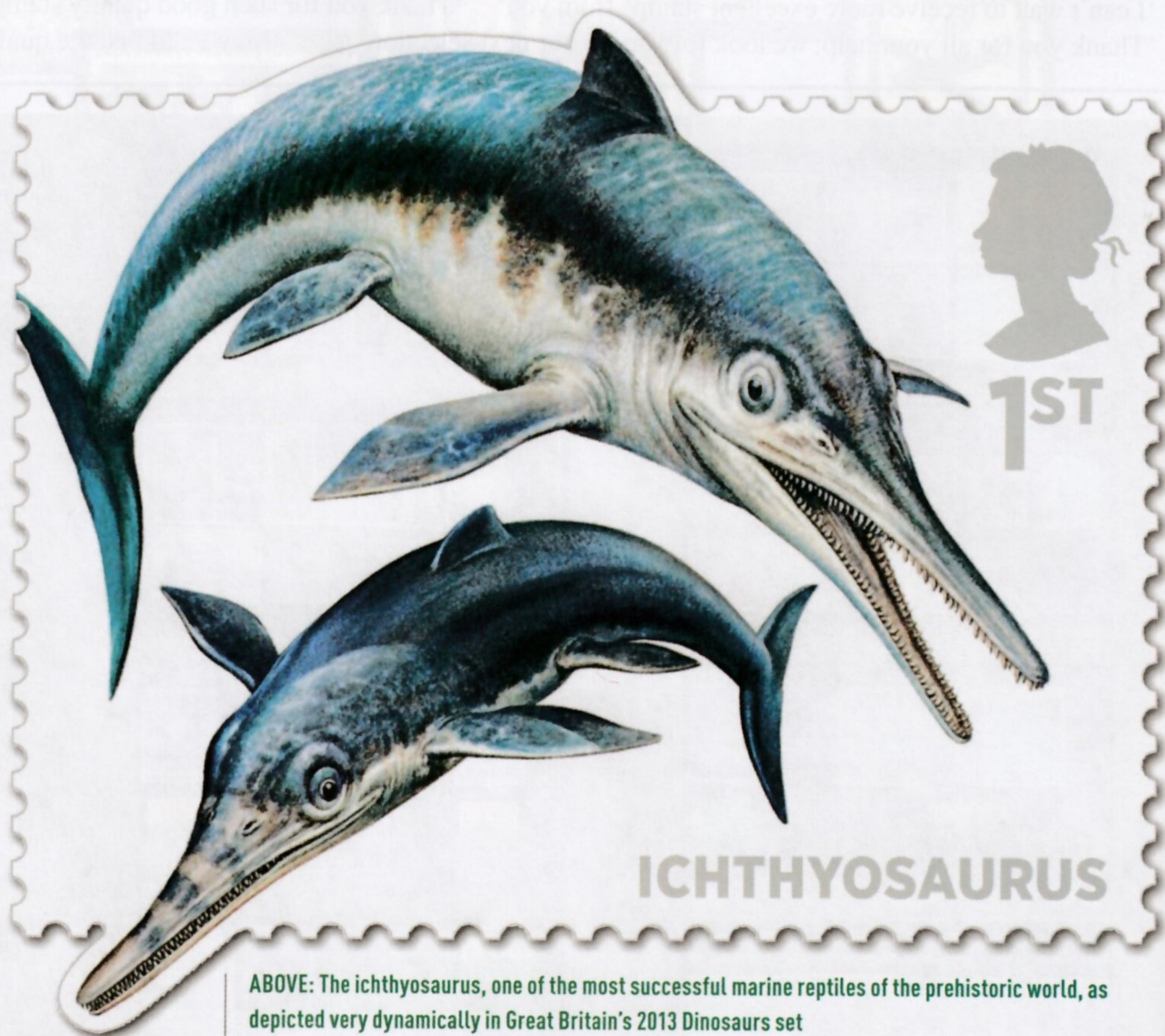
The reptiles which dominated the planet until the major extinction event 65 million years ago are often casually lumped together under the term 'dinosaur', but not all were dinosaurs.

Equally interesting are the large marine reptiles, of which perhaps the most abundant and successful were the ichthyosaurs.

Evolution and size

The name 'ichthyosaur' is derived from the ancient Greek, meaning 'fish-lizard'. In reality these animals were neither fish nor lizards, but marine reptiles.

They lived in the Mesozoic era, from the Early Triassic period



ABOVE: The ichthyosaur, one of the most successful marine reptiles of the prehistoric world, as depicted very dynamically in Great Britain's 2013 Dinosaurs set

LIKE DOLPHINS?

Although ichthyosaurs and dolphins have a similar shape, and many common features, they are completely unrelated animals.

Both evolved from land-dwelling ancestors, but dolphins appeared long after ichthyosaurs had died out.

Their similarities arise from what is known as convergent evolution, where species from different epochs adapt in similar ways to a similar environment.

■ Ichthyosaurs were euryapsids, a group of reptiles; dolphins are cetaceans, a group of mammals.

■ Ichthyosaurs had a vertically-orientated tail, so they swam in a fashion similar to sharks, beating it from side to side; dolphins have a horizontally-orientated tail, and move it up and down to propel themselves.

■ Ichthyosaurs had hind-fins to help them manoeuvre; dolphins have lost theirs.

■ Ichthyosaurs relied on their eyesight to hunt for their prey; dolphins rely much more on echo-location.

(about 250 million years ago) through the Jurassic period to the Late Cretaceous period (about 90 million years ago).

Although they were contemporaries of the land-based dinosaurs, they became extinct 30 million years before the last of the dinosaurs.

They evolved from a land-based ancestor, and continued to breathe air without the aid of gills. However, they adapted to living exclusively in water, with fish-like (or dolphin-like) streamlined bodies, fins instead of limbs, and a sickle-shaped tail.

More than 100 different ichthyosaur species have been identified, varying in length from about 1m (3ft) to at least 20m (65ft). Fragmental finds collected at Aust Cliff in Gloucestershire in 2016 suggest that one species reached around 25m, which is about the size of a blue whale.

Lifestyle and diet

Judging from fossils which contain the remains of their prey in the stomach region, most ichthyosaurs ate fish and molluscs, such as ammonites.

Larger species also appear to have consumed sea turtles, other marine vertebrates and even birds.

Over time, ichthyosaurs may have adapted their diets to focus on smaller prey, due to increasing competition from other marine predators such as the giant kronosaurus, a type of pliosaur.

It is thought that they developed the ability to hold their breath for long periods of time, perhaps as much as 20 minutes, while diving to depths of up to 600m in search of prey.

Some studies suggest they may have been warm-blooded, which would have allowed them to compensate for the colder water temperatures at depth.



ABOVE: *Ichthyosaurus communis*, the best recognised Jurassic-period ichthyosaur, as illustrated on stamps from Ascension in 1994, Barbados in 1993, Cuba in 2013, Nicaragua in 1994, Switzerland in 2010, Turks & Caicos Islands in 1995 and Yemen in 1990

Oversized eyes

Ichthyosaurs' eyes were notably large in relation to their body size.

The largest known was bigger than a football, with a diameter of more than 26cm (10in), which is the largest of any vertebrate animal, living or extinct.

Huge eyes allow greater light sensitivity and visual acuity, which would be a considerable advantage for a deep-diving hunter.

The eyeballs were surrounded by a bony reinforcement known as a sclerotic ring, which probably served to hold them in shape under the increasing pressure conditions at greater depths.

Reproduction

Although descended from oviparous (egg-laying) ancestors, ichthyosaurs were unusual among reptiles in being viviparous, carrying live embryos inside their bodies before giving birth.

This is clear from the fact that more than 100 fossils of female ichthyosaurs carrying embryos have been found to date.

It is reasonable to assume that they had developed some form of placenta for the care of their young.

Identification

The nature and origin of ichthyosaurs remained obscure

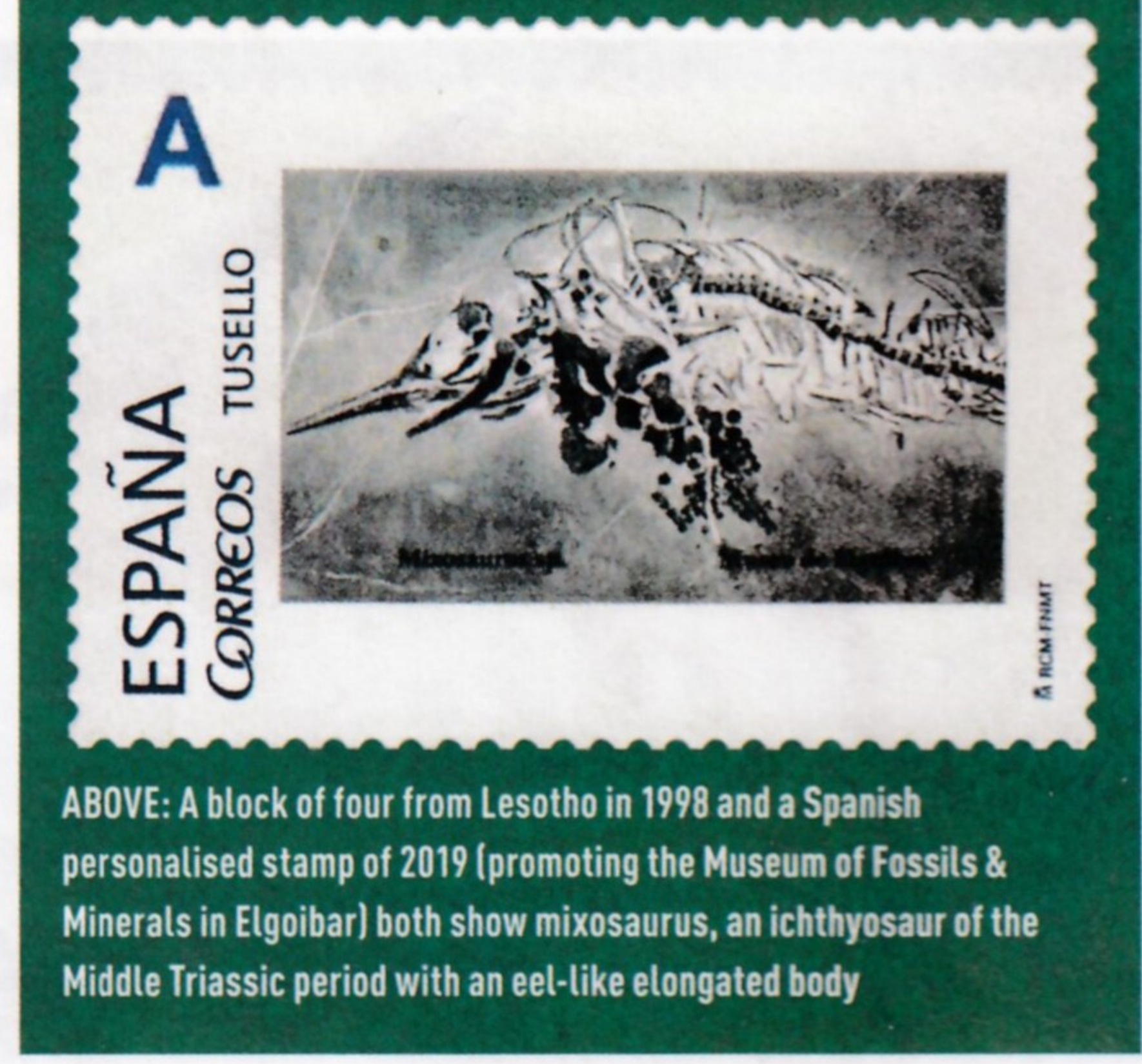


ABOVE: The earliest philatelic items depicting ichthyosaurs are German picture postcards of the late 19th century from Schloss Banz, a monastery with a collection of fossils in Bavaria, Germany. This example was posted in 1897

until comparatively recently. Although many museums had ichthyosaur fossils, they were misinterpreted as crocodiles, fish, lizards or 'sea dragons'.

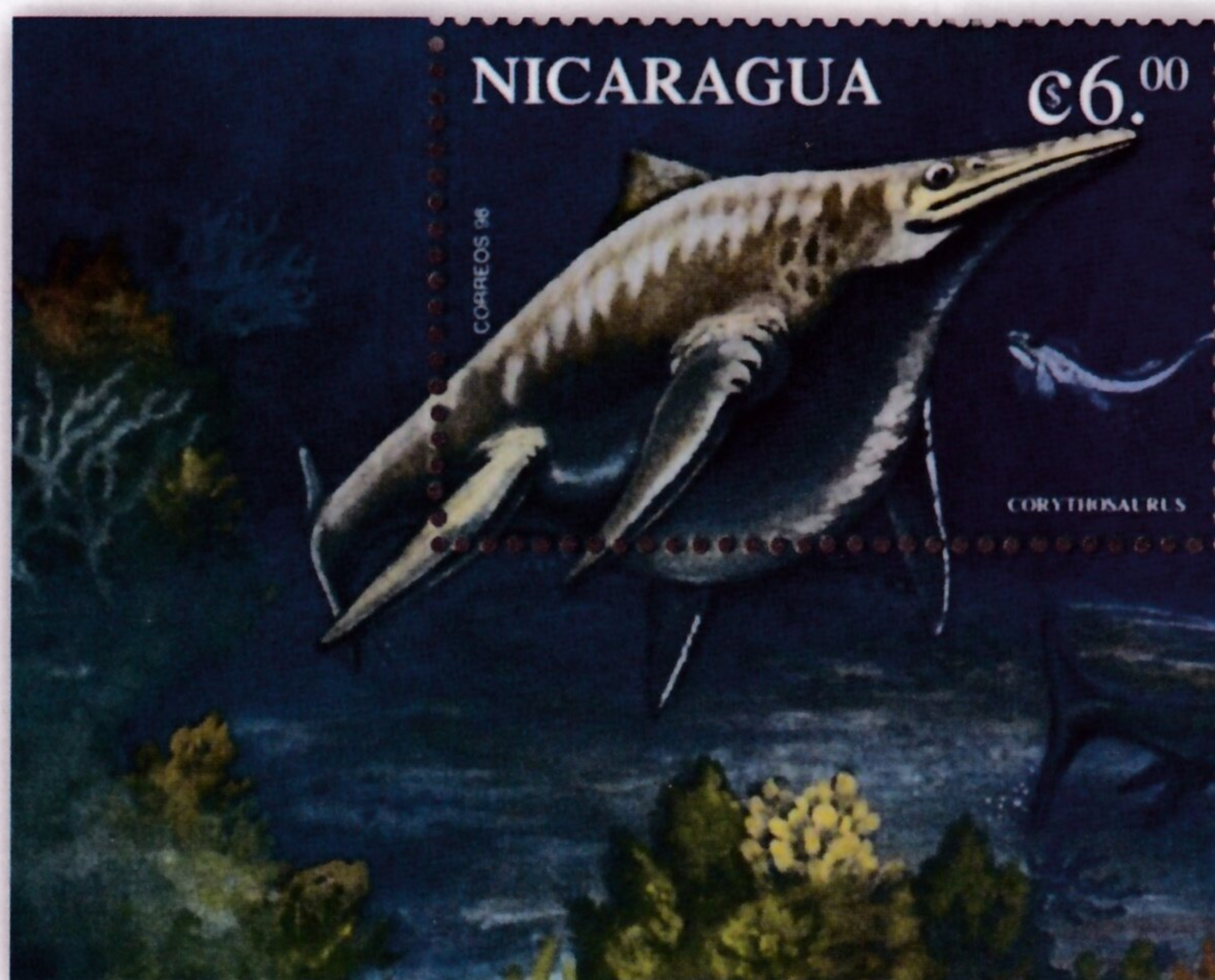
Articulated partial skeletons were known from the mid-18th century, but paleontologists could only speculate that they might have looked like lizards with flippers.

The first recognised partial skeleton was discovered at Lyme Regis in England in 1811-12, by the 12-year-old Mary Anning and her elder brother Joseph. Joseph spotted a 'crocodile' skull in the Jurassic seaside cliffs, and Mary, who would become a celebrated



ABOVE: A block of four from Lesotho in 1998 and a Spanish personalised stamp of 2019 (promoting the Museum of Fossils & Minerals in Elgoibar) both show mixosaurus, an ichthyosaur of the Middle Triassic period with an eel-like elongated body

ICHTHYOSAURS



ABOVE: A stamp from a Nicaragua miniature sheet of 1999 showing shonisaurus, one of the largest ichthyosaurs ever, which lived during the Middle Triassic period

paleontologist, later discovered the torso of the same specimen.

This fossil created a sensation when exhibited at William Bullock's Museum in London, and was later purchased at auction by the British Museum.

Over the next two centuries, it gradually became apparent that there were many different species of ichthyosaur, with a long and complex evolutionary history.

Early Triassic species

The first fragmental fossils of more primitive ichthyosaurs were not discovered until 1927, in Japan. Two skeletons were unearthed in the same country in 1982.

One of the earliest and most primitive members of the ichthyosaur group, which lived in the Early Triassic period about 250 million years ago, this animal

was named utatusaurus.

At about the same time, another basal ichthyosaur species was reported from China, and named chaohusaurus.

These animals did not have the dolphin-like form of later ichthyosaurs, but a more lizard-like appearance with an elongated body.

Middle Triassic species

A transitional form between primitive and later ichthyosaurs was the genus mixosaurus, of the Middle Triassic period.

This was a small to medium-sized ichthyosaur, not more than 2m in length, with a long tail and a low fin, suggesting it was a slow swimmer. Fossils have been found almost worldwide, including several hundred in Italy and Switzerland.



ABOVE: Stenopterygius, a Jurassic genus of ichthyosaur, on stamps from Sao Tome & Principe in 1982 and Sierra Leone in 1992



ABOVE: Animals of the closely related ichthyosaurus and ophthalmosaurus genera illustrated together in a set issued for Transnistria (an unrecognised breakaway state from Moldova) in 2016

'Many museums have long had ichthyosaur fossils, but they were misinterpreted as crocodiles, fish, lizards or sea dragons'

In contrast, another genus of the Middle Triassic, shonisaurus, was one of the largest ichthyosaurs. Discovered in North America, it could grow to 21m in length.

Jurassic species

A genus of primitive ichthyosaur found as late as the Early Jurassic period was suevoleviathan. Retaining large forefins and reaching 4m in length, it was discovered in Germany and France.

But also dating from this period is the holotype *Ichthyosaurus communis*, the dolphin-like animal most commonly illustrated on stamps and in other media.

A larger ichthyosaur of the Jurassic period was ophthalmosaurus, named for its extremely large eyes but also notable for its almost toothless jaws, well adapted for catching squid. Fossils of this genus have been recorded in Europe and the



Americas, and are up to 6m long.

The original ichthyosaur discovered by Anning was later classified as a temnodontosaurus, part of Jurassic genus which could reach up to 10m in length.

Another genus from the Early to Middle Jurassic period was stenopterygius. Hundreds of very well preserved fossils have been found in Europe, including pregnant animals with up to 11 embryos inside them.

Cretaceous species

Many of the later ichthyosaurs, from the Cretaceous period, are grouped within the genus platypterygius.

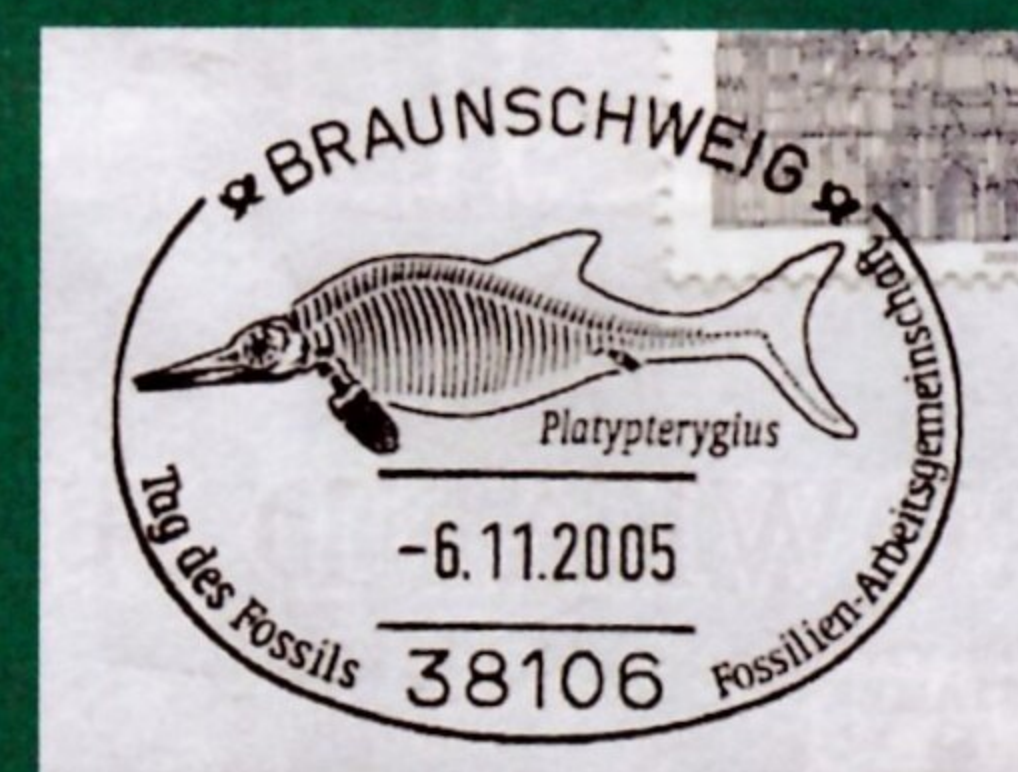
Reaching a length of about 7m, these animals had a particularly long snout and a powerful finned tail.

Fossils have been found around the world, including in Australia, with the remains of sea turtles and birds in their guts. ■

ABOVE: A series of postmarks used at Digne-les-Bains in France in the 1990s depicted suevoleviathan, a primitive ichthyosaur of the Early Jurassic period



ABOVE: This pictorial postmark of Miyagi Prefecture in Japan, in use from 1989-2011, is the only known philatelic item illustrating utatusaurus, a primitive ichthyosaur of the Early Triassic period



ABOVE: This postmark of Braunschweig in Germany, used in 2005, is the only known philatelic item featuring platypterygius, a later ichthyosaur which thrived in the Cretaceous period

DISCOVERY TIMELINE

1602 Johannes Bauhinus publishes an illustration of a tooth from an unknown marine reptile found in Württemberg, Germany.

1699 Edward Llwyd publishes an illustration of an ichthyosaur vertebrae found in England, incorrectly identified as belonging to a fish.

1708 Johann Scheuchzer publishes an illustration of two ichthyosaur vertebrae, incorrectly identified as those of a human who drowned during the biblical flood.

1749 Albert Mohr finds an incomplete skeleton of an ichthyosaur in Württemberg, incorrectly described as a ray-like fish.

1811 Joseph and Mary Anning find the skull and then the torso of an ichthyosaur in Dorset, England.

1814 Everard Home attempts the first scientific description of an ichthyosaur, based on the Anning finds, as a crocodile-like animal.

1817 Charles Koenig coins the

term 'ichthyosaurus' in the British Museum's inventory of fossils.

1821 Henry De La Beche and William Conybeare provide the first systematic description of ichthyosaurs, correctly identifying them as reptiles.

1840 Richard Owen assigns the name *Ichthyosaurus latifrons* to the British Museum's specimen.

1841 A skull and some bones of a giant ichthyosaur are found in Bavaria, Germany.

1922 Friedrich von Huene reviews all known genera of ichthyosaurus, and renames some species.

1927 First fragmental fossils of a Triassic ichthyosaur are discovered in Japan, and named utatusaurus.

1995 Studies of utatusaurus skeletons demonstrate that ichthyosaurs evolved from land-living ancestors.

2004 The largest ichthyosaur species recorded to date, *Shonisaurus sikanniensis*, is discovered in British Columbia, Canada.



ABOVE: An unidentified ichthyosaur depicted on a postal stationery postcard of Germany, with a cachet noting the Sindelfingen international stamp fair in October 2000



ABOVE: A stamp from Benin in 1998 shows an ichthyosaur falling prey to a much larger kronosaurus, a genus of pliosaur