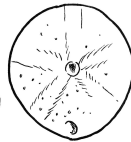


Geology fact sheet: SEA URCHINS (ECHINOIDS)



An unfossilised sea urchin

Sea urchins (echinoids) are related to sea lilies (crinoids) and starfish. They all share a 'five-fold symmetry', which you can see most clearly in the five arms of a starfish. This group of animals is diverse and relatively common as fossils within the Chalk. The echinoids are the most widely encountered of these animals, in particular *Conulus*, *Echinocorys* and *Micraster*.



Side view bottom view



Side view bottom view



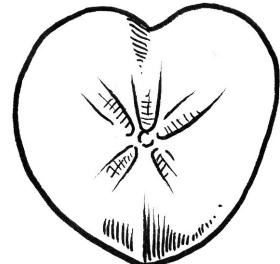
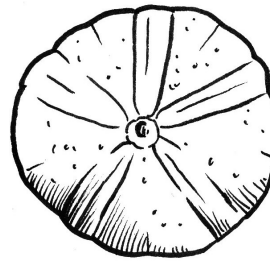
Side view bottom view

Most of the echinoids found in the Chalk lived on the surface of the sea floor, but a few were shallow burrowers. The 'tests' (shells) of these fossil echinoids are often found complete, but it is much rarer to find their spines still attached.



Close-up of a fossilised urchin spine

Like starfish, echinoids have a skeleton composed of calcitic plates embedded in their skin. These plates form the test of a sea urchin. 'Regular echinoids' have perfect five-fold symmetry, but 'irregular echinoids' are also bilaterally symmetrical – which often makes them heart-shaped.



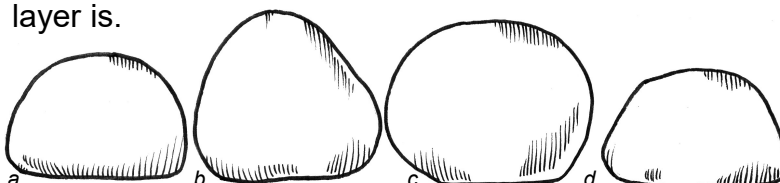
A regular echinoid (left) and an irregular or 'heart' echinoid (right)

Just like starfish, echinoids have 'tube feet'. Echinoids move using their tube feet as well as using their spines. The tube feet extended out of small pores (which you can still see in many fossils echinoids). Each spine is attached to a circular 'tubercle' on the surface of the test.



Close-up of tubercles (spine attachments) and pores (tube feet holes)

The fossil echinoid species that you are most likely to come across in Norfolk is called *Echinocorys scutata*. This type of echinoid comes in a wide variety of shapes and sizes. This is extremely useful, as the different varieties are from different layers within the Chalk – helping geologists to identify how old each layer is.



Varieties of *Echinocorys scutata*; a. 83 to 86 mya (million years ago), b. 71 to 83 mya, c. 86 to 89 mya, and d. 83 to 86 mya

Echinoids can be preserved in a number of different ways.

- Their calcitic plates may be intact, but flint or chalk has filled the inside.
- The plates may have disappeared, leaving an impression of the inside cast in flint.
- An impression of the plates may be left in a piece of flint – this is an external mould.

