CRINOIDS

CRINOIDEA

Phylum	Echinodermata
Class	Crinoidea
Genus	Crinoid
Extant	Ordovician to present – Most common in the Paleozoic

The name crinoid is derived from a Greek word for `a lily'. Crinoids live in both shallow waters and even depths up to 9000m (deep ocean trenches). Crinoids in their adult forms are commonly called **sea lilies.**

They have **calcareous plates**, which show the **same five-fold symmetry** displayed by other **echinoderms**, such as echinoids, but usually have completely **different modes of life**.

Ossicle: is a disc-like calcite plate which makes up the stem of a crinoid.

Brachia: are the flexible arms of the crinoid. They may branch and have a groove lined with tube feet to trap food particles and pass it down to the mouth.

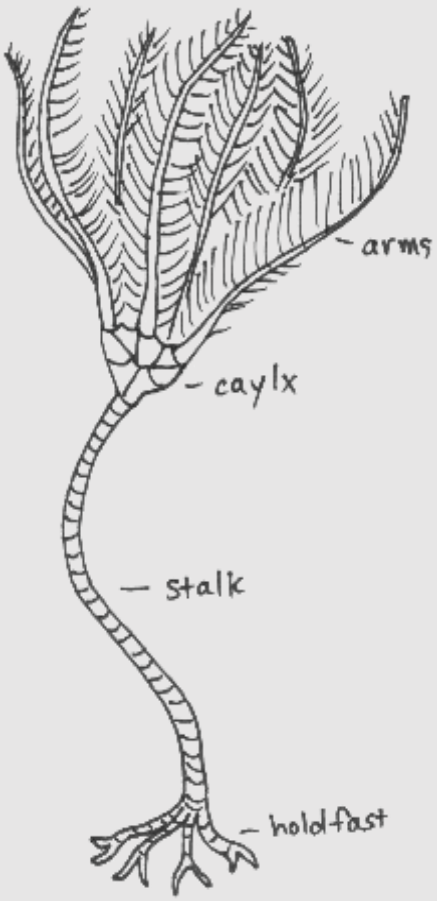
Calyx: is a cup made of flat calcareous plates, which contained the soft body of the animal.

Anal tube: is found in the centre of the calyx. Its function is to take waste away and prevent it from mixing with freshwater supplies.

CRINOID MORPHOLOGY

A crinoid has four main parts to its body:

1. **The holdfast**
2. **The stem**
3. **The calyx**
4. **The brachia**



- The calyx is the **main part of the crinoid** which **houses most of the soft parts** of the body.
- The calyx is **supported by the stem** which consists of **many ossicles** (**disc-like calcareous plates**) which are **linked** together through their centres **by soft tissue**.
- The **calyx has arms of brachia** which **gather food particles** to **pass it to the mouth** in the upper surface of the calyx.
- The **brachia are delicate** structures capable of **creating small currents** that **waft in water laden with food** particles. **Cilia** (like tiny hairs) protrude along the brachia arms to increase the surface area and so current creating ability.
- The **brachia, calyx and stem** are all made up of **calcareous plates**, maybe with a **thin organic covering** to hold them together. The **brachia** and **stem are still flexible** as the plates can articulate in these parts.
- The **stem** holding the crinoid to the floor is **made up of ossicles**, calcareous discs with a **central hole** that supports a '**string' of living tissue** through them. This draws the plates together while leaves them to be **flexible and strong**.
- **Brachial plates** are similar but may have a **V-groove on the upper surface** along which the **food particles** are **moved by cilia.**

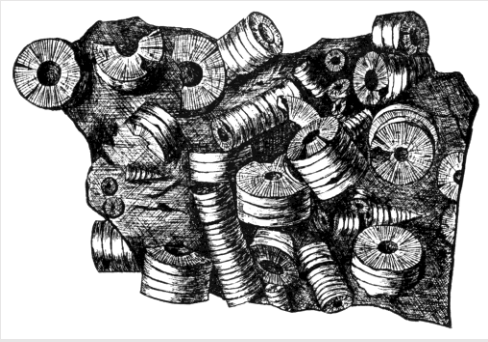
MODE OF LIFE

Crinoids today can be either **sessile, epifaunal** (stemmed forms like sea lilies that are fixed to the sea bed) or **nektonic** (free swimming, feather stars).

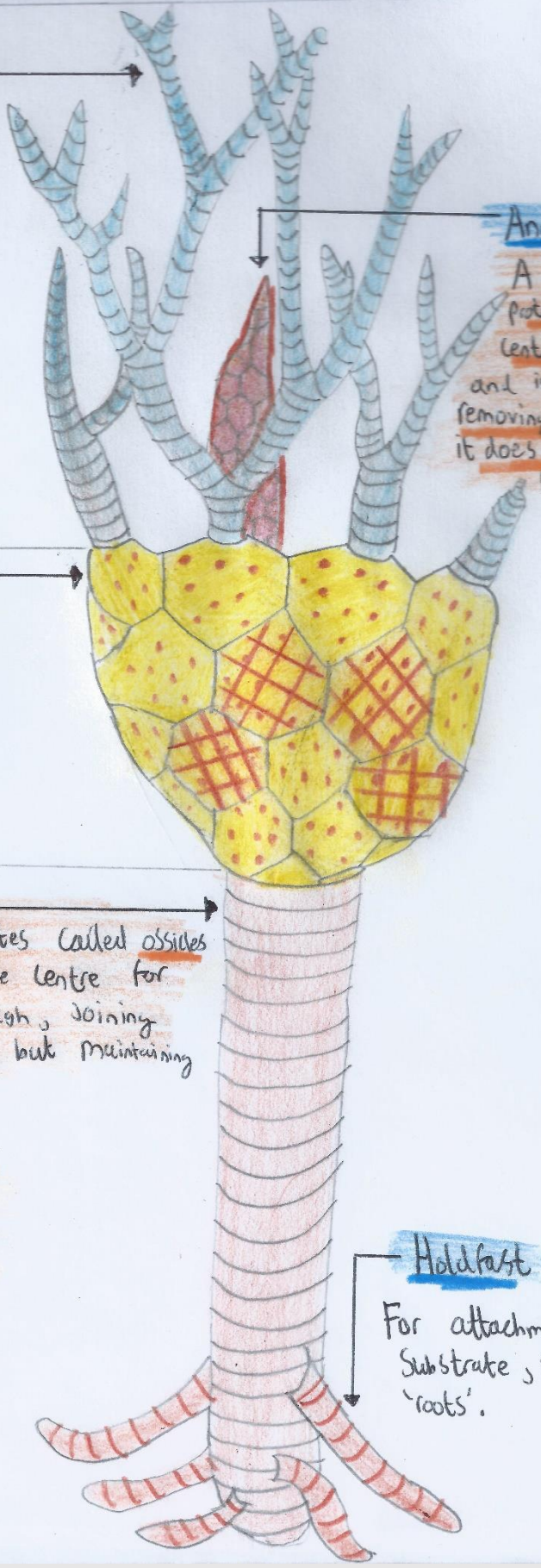
Studies show that **most fossil crinoids were sessile, epifaunal stem type** crinoids. They are not a good palaeo-environment indicator since they are **found today in almost all water depths** (shallow to 9000m!).

Present-day Crinoids **do not seem to match** the environments shown by the fossil record, being **mostly** associated with **shallow-marine environments.**

Crinoids are important in the fossil record since they were present in the **upper Palaeozoic**, where **bioclastic limestone** can be largely composed of **fragmented crinoids.**



Crinoid Morphological Features



Brachia

Delicate structures which waft in the currents, using cilia, collecting food particles.

This collects food which is passed to the mouth in the upper surface of the Calyx

* Brachia are flexible

Anal tube

A structure that protrudes from the centre of the Calyx and is responsible for removing waste so that it does not mix with freshwater intake.

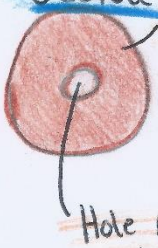
Calyx

The main part of the Crinoid which houses the soft tissues. It consists of the infrabasal, basal and radial plates showing five-fold symmetry.

Stem

Composed of calcite plates called ossicles which have a hole in the centre for soft tissue to pass through, joining the plates together strongly but maintaining flexibility.

Ossicle



Calcite plate making up part of the Stem.

Hole for soft tissue linkage

Holdfast

For attachment to the substrate, sometimes called 'roots'.