

# Echinodermata

## การจัดหมวดหมู่

Phylum Echinodermata แบ่งเป็น 2 subphylum คือ

Subphylum Eleutherozoa

Class Asteroidea

Class Ophiuroidea

Class Echinoidea

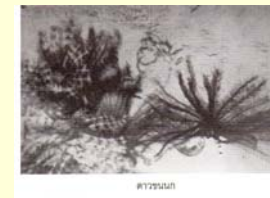
Class Holothuroidea

Subphylum Pelmatozoa

Class Crinoidea

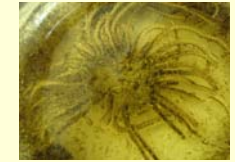
## Class Crinoidea

1. feather star
2. sea lily



## Class Holothuroidea

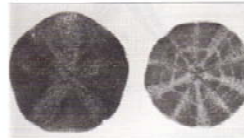
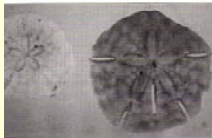
1. Sea cucumber, *Holothuria atra*



## Class Echinoidea

1. sea urchin, radial symmetry
2. sand dollar, bilateral symmetry

adaptation for burrowing in sand



petaloid



lunule

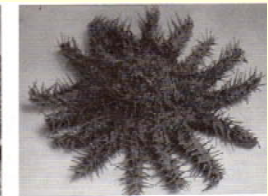
keyhole sand dollar (common sand dollar)

- large, elongated openings called "lunule" (2-many, symmetry)

- petal-shaped area of irregular urchins that bear specialized respiratory podia called **petaloid**

## Class Asteroidea

1. sea star



radial canal

tube feet, podia

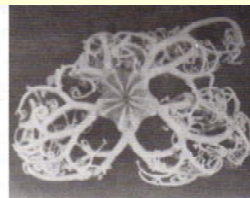


ring canal

larva ของ sea star

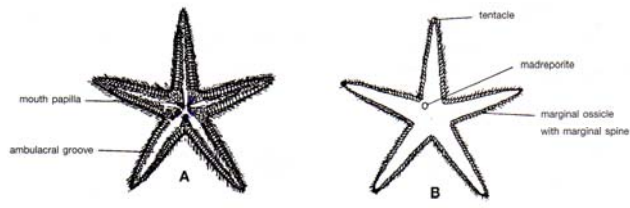
## Class Ophiuroidea

1. brittle star
2. basket star

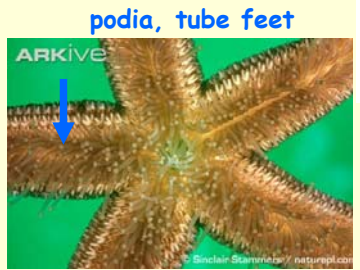




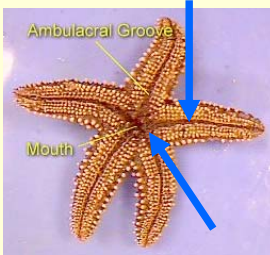
**sea star**  
ลักษณะภายนอก



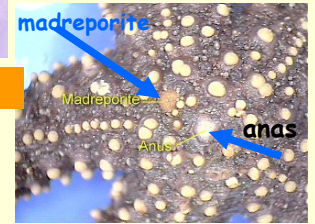
ภาพที่ 9-2 ดาวทะเล Astropecten A. ด้านปาก B. ด้านตรงข้ามปาก



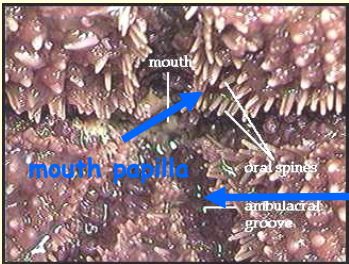
**ambulacral groove**



**mouth papilla**

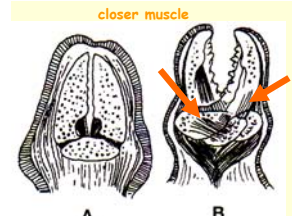


**podia, tube feet**

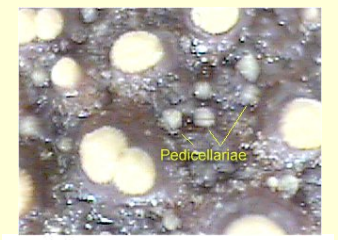
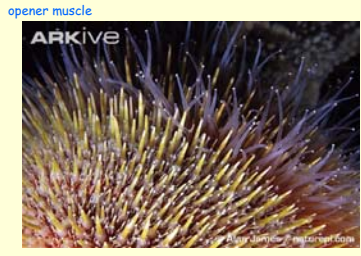


**podia, tube feet**

**Pedicellariae**



stalked pedicellaria:  
A.forceps B.scissors type  
(Lutz, 1986)



**spine, pedicellariae and tube feet**

Pedicellaria(e) -small jaw-like appendages for protection and feeding.

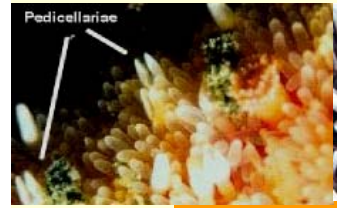
เพ็ดเซลลารีเยของ Astropecten

**pedicellariae ของ sea star**



**paxilla ของ sea star**

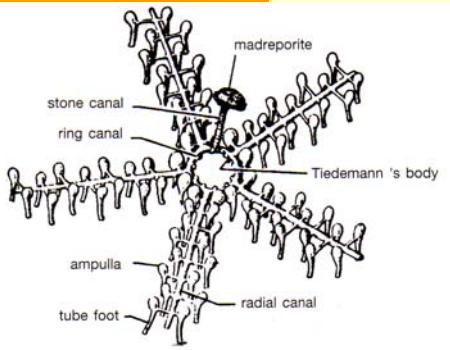
A ossicle crowned with small, movable spine  
พนักแบบ paxilla ของ Astropecten



**Water-vascular system**



**Tube feet**



ระบบท่อลำเลียงน้ำของดาวทะเล  
(Storer et al., 1979)

- Water vascular system functions as a means of locomotion.
1. the button-shaped madreporite
  2. stone canal (named due to calcareous deposits in canal walls)
  3. ring canals give rise to 4-5 pairs of greatly folded pouches call Tiedemann's body to remove unwanted particulates from WAS
  4. radial canal extends into each arm at center of ambulacral groove
  5. lateral canal
  6. ampulla
  7. Tube feet or podium