

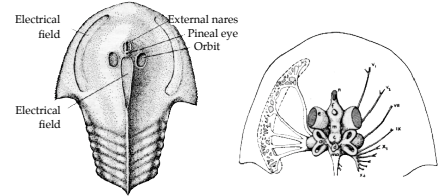
Agnatha

Diversified through the Silurian and into the Devonian.

After the Devonian we lose their fossil record because they lost their bony skeletons

9

Cephalaspid Agnathan head



Electrical field

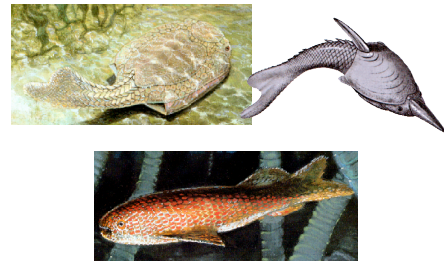
External nares

Pineal eye

Orbit

10

A few more agnathans

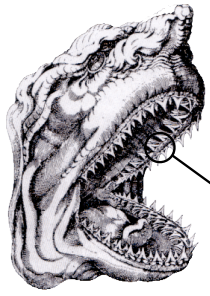


11



The only surviving agnathans are lampreys and hagfish. Lampreys are parasitic on living fish and hagfish only eat rotting flesh.

12



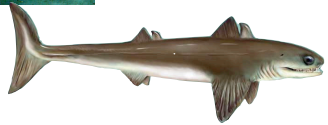
Steno's original illustration of a modern shark, from a 1667 woodcut.

"Ever growing" teeth.

21

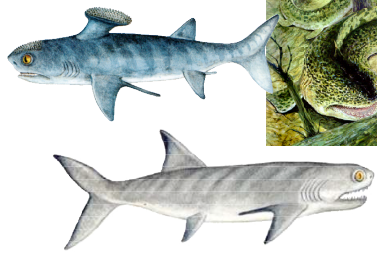


Cladoseleche
Devonian
3 feet long



22

Various Paleozoic Sharks



23

More Paleozoic Sharks



Helicoprion



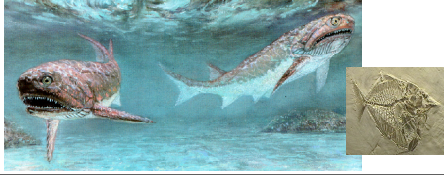
24

OSTEICHTHYES

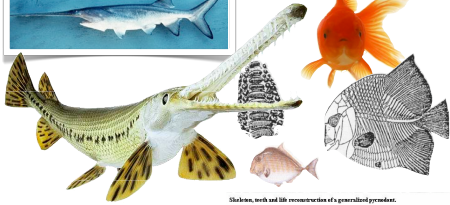
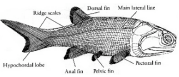
(Actinopterygia)
(Ray-finned fish) Appear in
the Devonian and make up
over 90% of all modern fish



Cheiralepis (Devonian) - up to 20 cm long.



29



Shark, with and life reconstruction of a generalized gizzard.

30

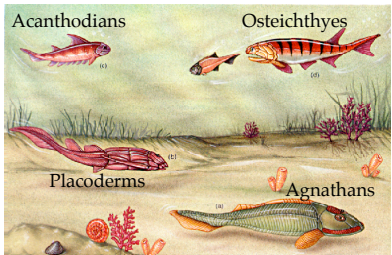


Xiphactinus



31

DEVONIAN - AGE OF FISH



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CHOANATA



The Dipnoi (lung fish) are surviving, little-changed, examples of primitive of choanates and are the sister group of all vertebrates with true legs (tetrapods).

As choanates they have external nostrils that pass into the mouth, and lungs.

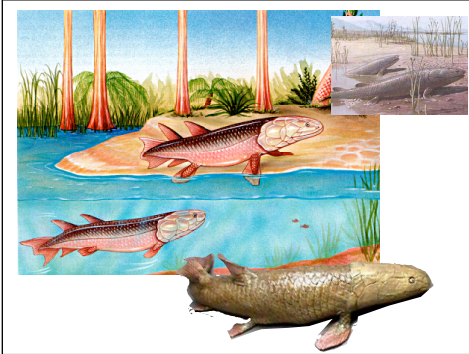
Eusthenopteron is an extinct early choanate that is closer to the primitive group that gave rise to the first tetrapods than are the lung fish.



Eusthenopteron

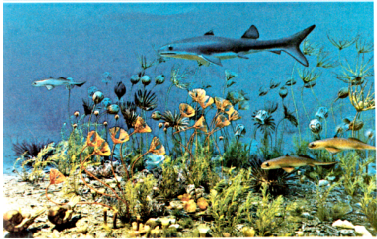


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38

MISSISSIPPIAN SEA FLOOR



39

AND ON TERRA FIRMA...

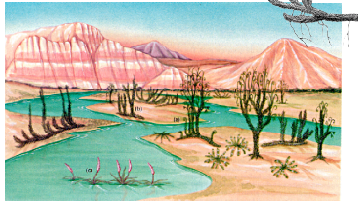
40



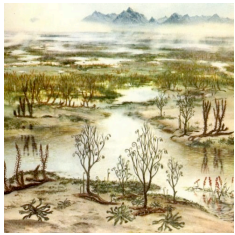
Rhynia - late Silurian/early Devonian

Vascular plants diversified in the Devonian, though they first appeared in the Silurian. The first arborescent forms appear by the end of the Devonian.

As the vascular plants began to invade the land so did the first terrestrial animals, scorpions, spiders and millipedes - all arthropods.

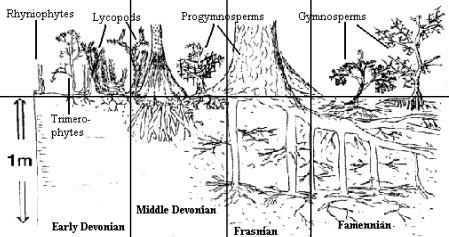


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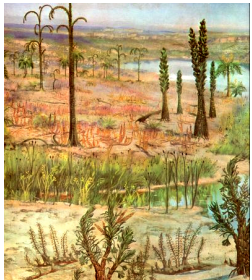
42

The Evolution of Land Plants in the Devonian



43

Late Devonian Forest



44

WE WILL FINISH THE
DEVONIAN IN THE NEXT
LECTURE