

Phylum Chordata - vertebrates

- Vertebrates have a jointed internal skeleton of bone or cartilage
- The central feature of vertebrates is the brain case or cranium
- Most vertebrates have bilateral symmetry in their skeletons.
- First appeared in the Cambrian, but marine vertebrates (fish) exploded onto the scene in the Devonian (The age of fish)
- Development of jaws very important, once paired with lungs and limbs, land habitation was possible.

Fish - The first vertebrates

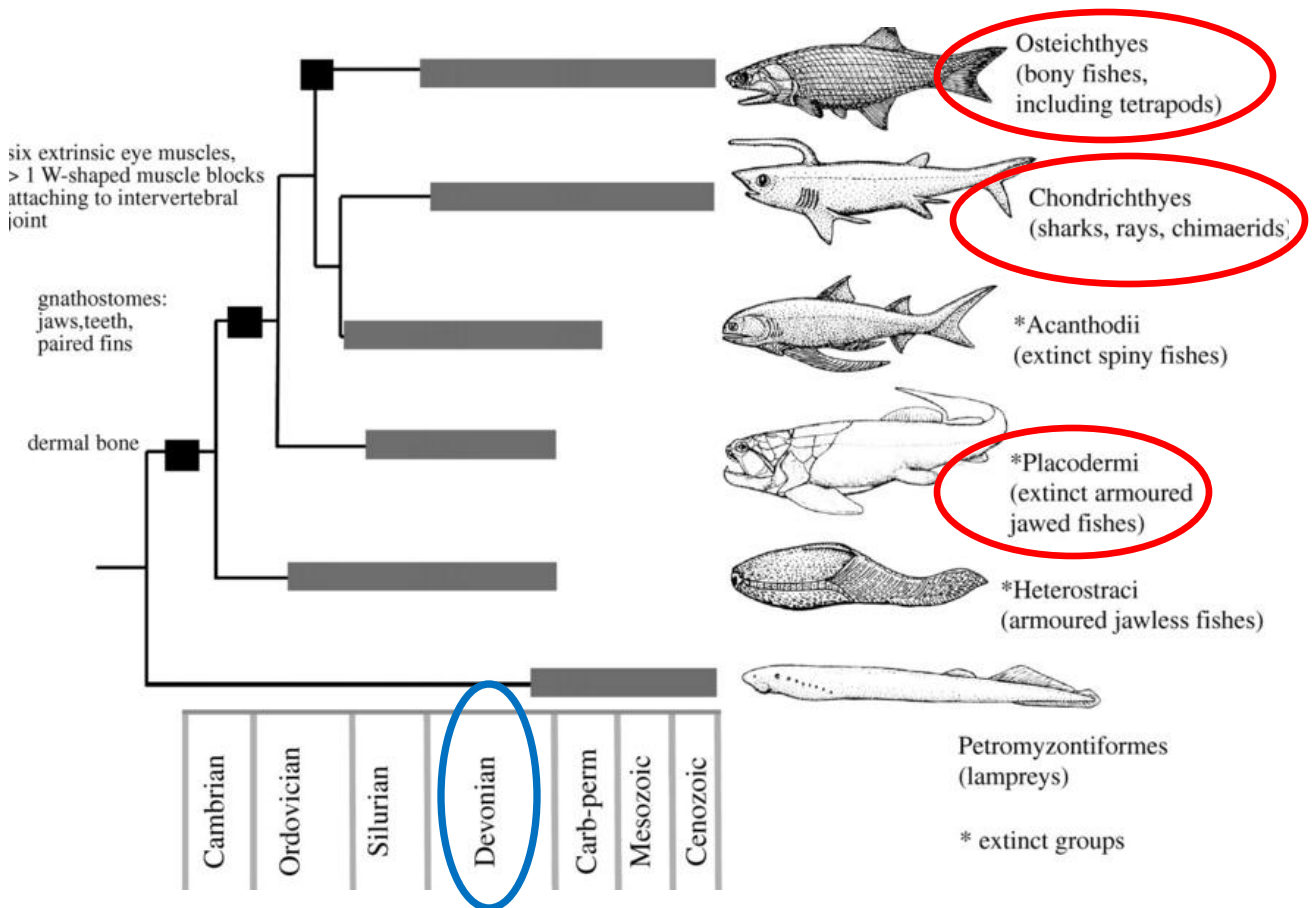
There are basically **four** classes of aquatic vertebrates and you are responsible for classes and genus in three of them

Superclass Agnatha (Jawless Fish) -- none on your list

Class Placodermi (Armored Fish) - 2 genus

Class Chondrichthyes (Cartilaginous Fish) -- 4 listings

Superclass Osteichthyes (Bony Fish) - 3 listings



Fish (continued)

Class Placodermi (Armored Fish)

50. Genus *Bothriolepis*



Class Placodermi (Armored Fish)

51. Genus *Dunkleosteus*

Silurian-Devonian only

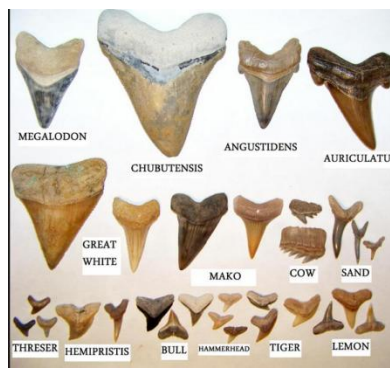
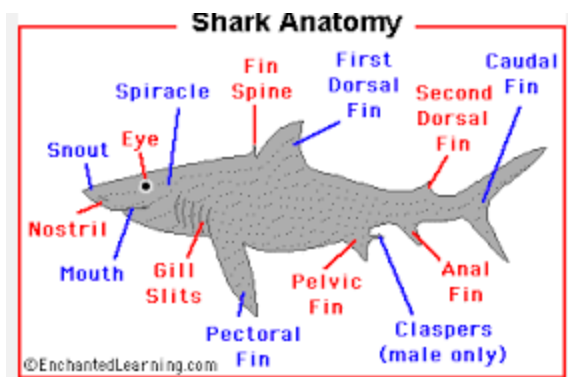


Huge, up to 10m long



Class Chondrichthyes (Cartilaginous Fish)

52. Suborder Selachimorpha (Sharks, Shark Teeth)

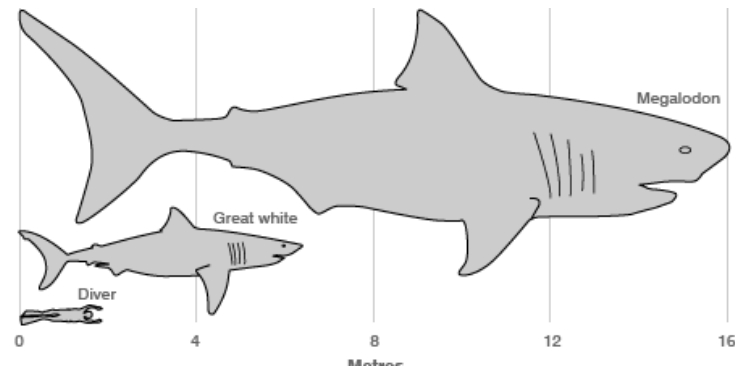


Fish (continued)

Suborder Selachimorpha (Sharks)

53. Genus *Carcharodon*

Genus includes great white shark



Great current debate:
do large sharks of
today (genus-
Carcharodon) evolve
from megalodon or
from a distinct genus
(now called
Carcharocles)

Suborder Selachimorpha (Sharks)

54. Genus *Carcharocles*

Extinct (Eocene to Pliocene)

Suborder Selachimorpha (Sharks)

55. Species *C. megalodon*

- Extinct – lived from 16 to 2.6 million years ago
 - megalodon means “big tooth” in Greek
 - At 18m, perhaps most powerful predator ever
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Fish (continued)

Class Chondrichthyes (Cartilaginous Fish)

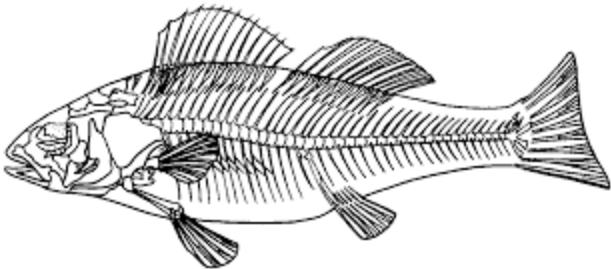
56. Suborder Batoidea (Rays)



Superclass Osteichthyes (Bony Fish)

45 orders, and over 435 families and 28,000 species

57. Class Actinoptertgai (Ray-finned)



Fish (continued)

Class Sarcopterygii (lobe-finned)

58. Order Coelacanthiformes (Coelacanth)

Thought to be extinct, 2 species discovered in 1938 off South Africa



Class Sarcopterygii (lobe-finned)

59. Genus *Tiktaalik*

Tiktaalik is a monospecific genus of extinct sarcopterygian from the late Devonian period, about 360 Mya, with many features akin to those of tetrapods. Tiktaalik may be representative of the evolutionary transition from fish to amphibians. [Wikipedia](#)



The coelacanths, which are related to [lungfishes](#) and [tetrapods](#), were believed to have been [extinct](#) since the end of the [Cretaceous](#) period. ^{[[citation needed](#)]} More closely related to tetrapods than even the [ray-finned fish](#), coelacanths were considered transitional species between fish and tetrapods. ^{[[citation needed](#)]} The first *Latimeria* specimen was found off the east coast of South Africa, off the [Chalumna River](#) (now Tyolomnqa) in 1938. ^[9] Museum curator [Marjorie Courtenay-Latimer](#) discovered the fish among the catch of a local angler, Captain Hendrick Goosen, on 22 December 1938. ^[9] A Rhodes university ichthyologist, [J.L.B. Smith](#), confirmed the fish's importance with a famous cable: "MOST IMPORTANT PRESERVE SKELETON AND GILLS = FISH DESCRIBED". ^[9]

The discovery of a species still living, when they were believed to have gone extinct 66 million years previously, makes the coelacanth the best-known example of a [Lazarus taxon](#), an evolutionary line that seems to have disappeared from the fossil record only to reappear much later. Since 1938, *Latimeria chalumnae* have been found in the [Comoros](#), [Kenya](#), [Tanzania](#), [Mozambique](#), [Madagascar](#), and in [iSimangaliso Wetland Park](#), [Kwazulu-Natal](#) in South Africa. ^{[[citation needed](#)]}