

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

INTRODUCTION TO AQUATIC SCIENCES

3. Week | What is fish? Taxonomy of fish

Introduction to Aquatic Sciences

WEEKLY TOPICS (CONTENT)

Week	Topics
1. Week	Aquaculture in Turkey and world
2. Week	The role of fish in human consumption
3. Week	What is fish? Taxonomy of fish
4. Week	Aquatic Crustacean
5. Week	Water quality for aquaculture
6. Week	Introduction to marine fish
7. Week	Introduction to freshwater fish
8. Week	Live foods (microalgae, zooplankton and <i>Artemia</i>)
9. Week	Introduction to fishing techniques
10. Week	Fish transport
11. Week	Introduction to fish disease
12. Week	Introduction to fisheries economy
13. Week	Processing and marketing of fish
14. Week	Introduction to fisheries and aquaculture management

What is a fish?

The cyprinid fish (8mm) and the whale shark (12m) are some of the smallest and largest fish in the sea. At first, this might seem like an easy question to answer, but it is difficult to define what makes a fish a fish because there is so much diversity among animals that we consider to be fishes. There are more than 27,900 species of fishes alive today, living in marine and freshwaters, in environments as hot as 104°F/40°C and as cold as 28°F/-2°C, and ranging in length from 0.3 inches/8 mm to 39 feet/12 m. What characteristics unite such a diverse group of animals?

What is a fish?

All fishes ...

have a brain protected by a braincase and an obvious head region with eyes, teeth, and other sensory organs

Most fishes ...

are vertebrates with vertebrae protecting the spinal cord

live in water

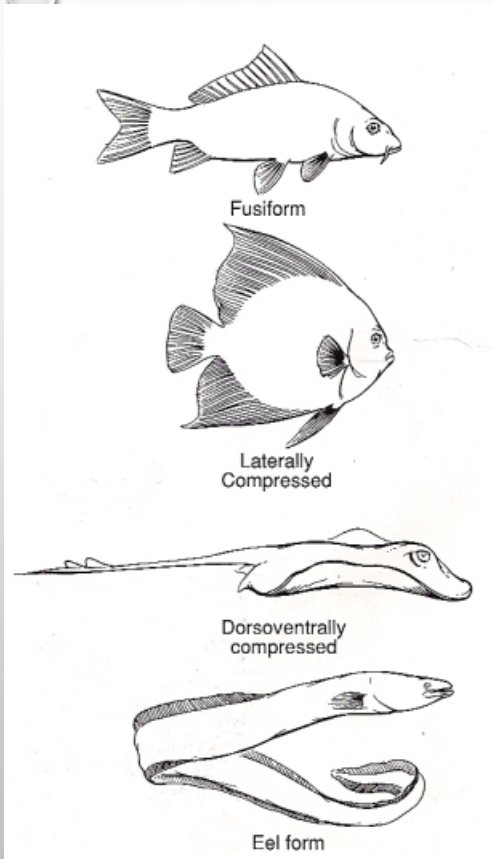
breathe primarily with gills rather than lungs

have paired limbs, in the form of fins that aid in locomotion

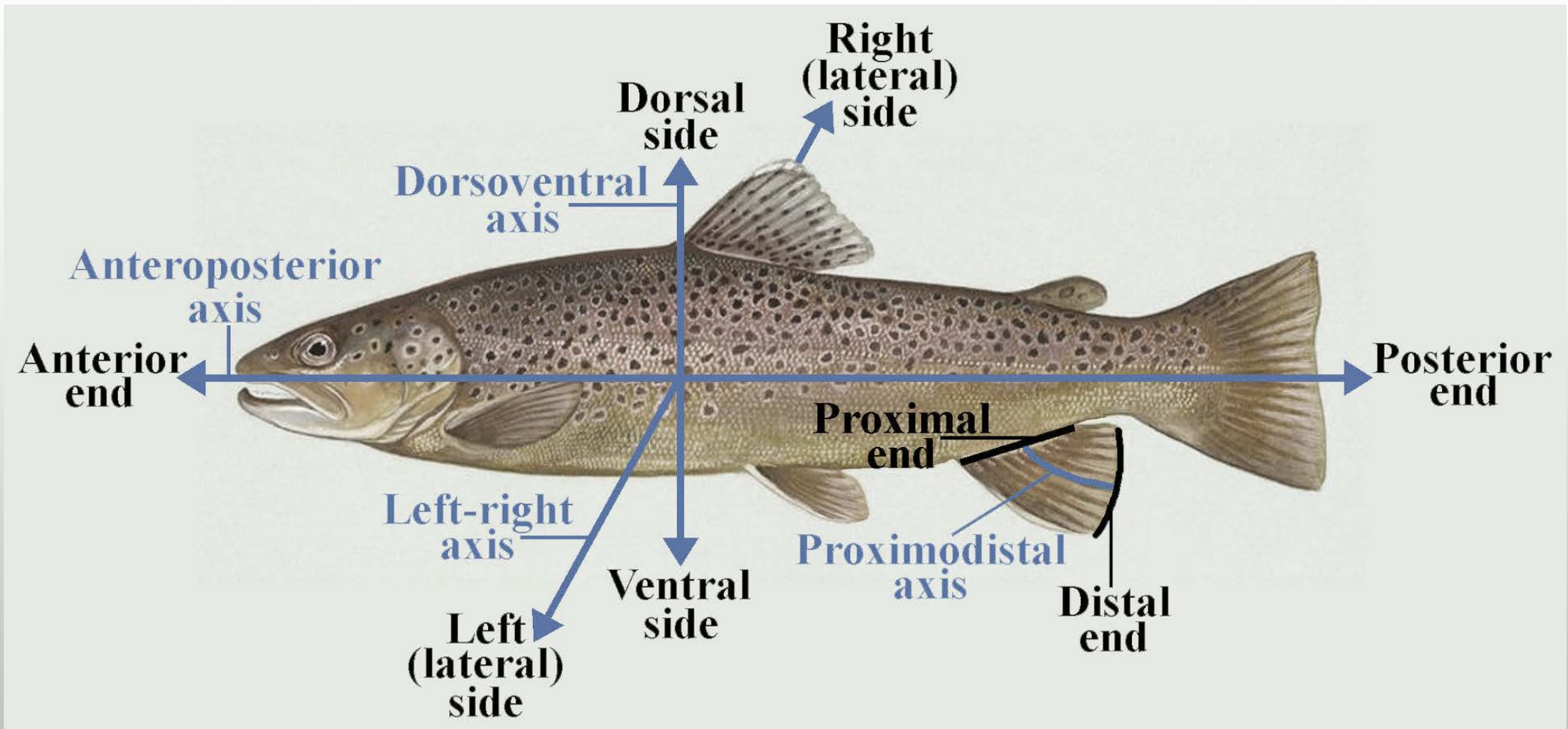
are unable to regulate their own internal body temperatures

are covered with scales that protect their bodies

There are many exceptions to these guidelines. For example, hagfish aren't vertebrates and don't have scales; mudskippers can live outside the water; lungfish use lungs to breathe; lampreys don't have paired fins; and tuna are warm blooded!

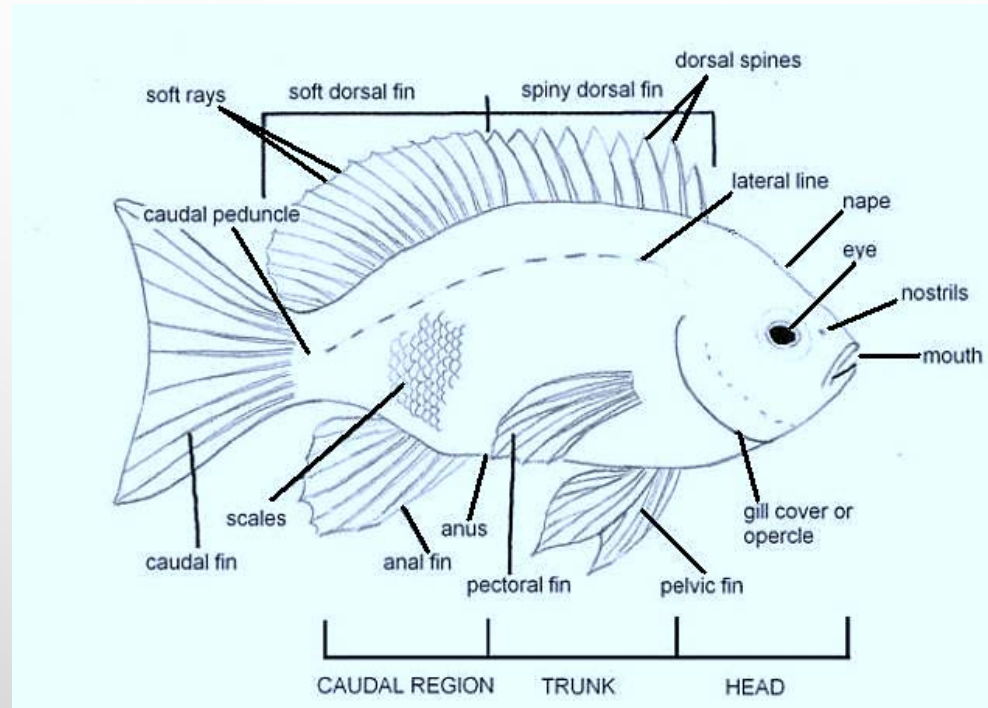


Fish anatomy is the study of the form or morphology of fishes. It can be contrasted with fish physiology, which is the study of how the component parts of fish function together in the living fish.



https://en.wikipedia.org/wiki/Fish_anatomy#/media/File:Anatomical_Directions_and_Axes.JPG

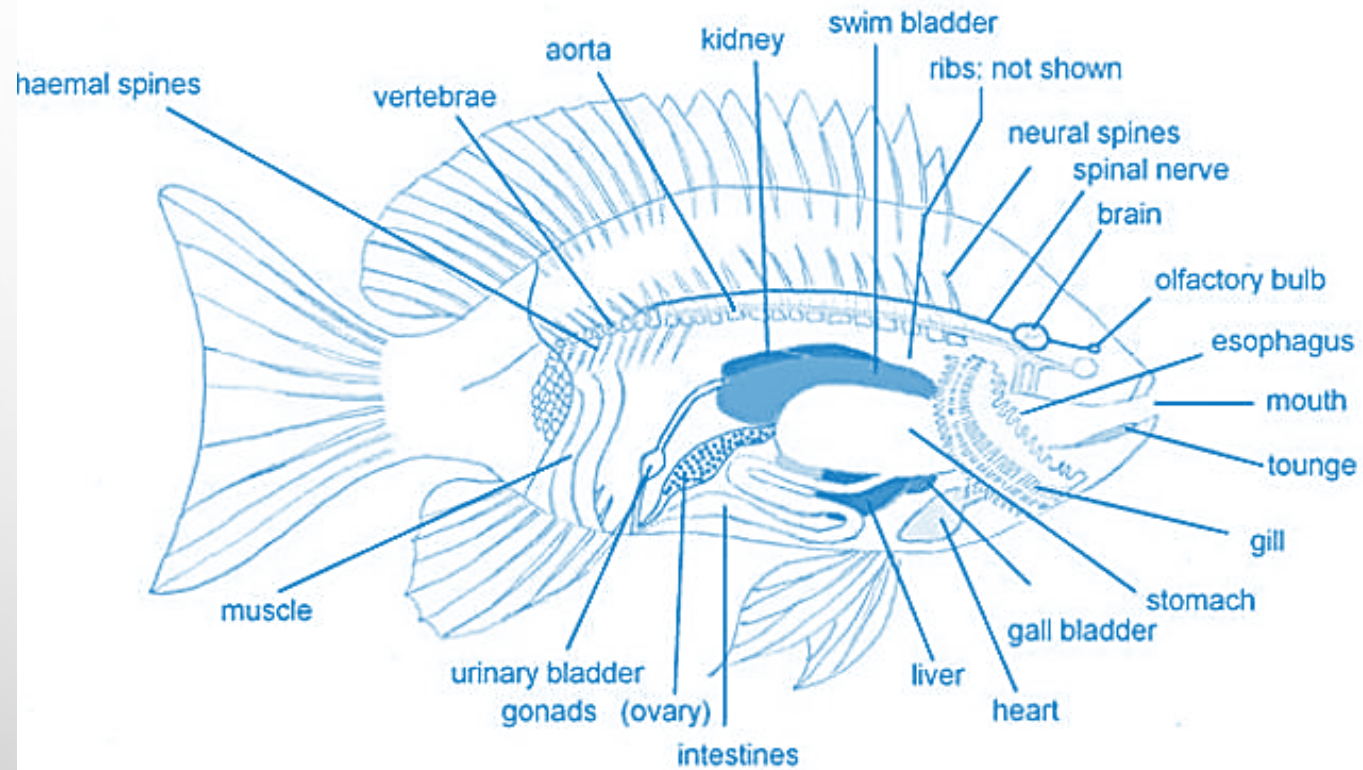
In many respects fish anatomy is different from humans and mammals, yet it shares the same basic vertebrate body plan from which all vertebrates have evolved: a notochord, rudimentary vertebrae, and a well-defined head and tail.



McGinnis, Samuel M (2006) Field Guide to Freshwater Fishes of California page 45, University of California Press. ISBN 9780520936966]

Waggoner, Ben. "Vertebrates: Fossil Record". UCMP. Retrieved 15 July 2011.

http://www.masa.asn.au/masawiki/index.php/Fish_Anatomy

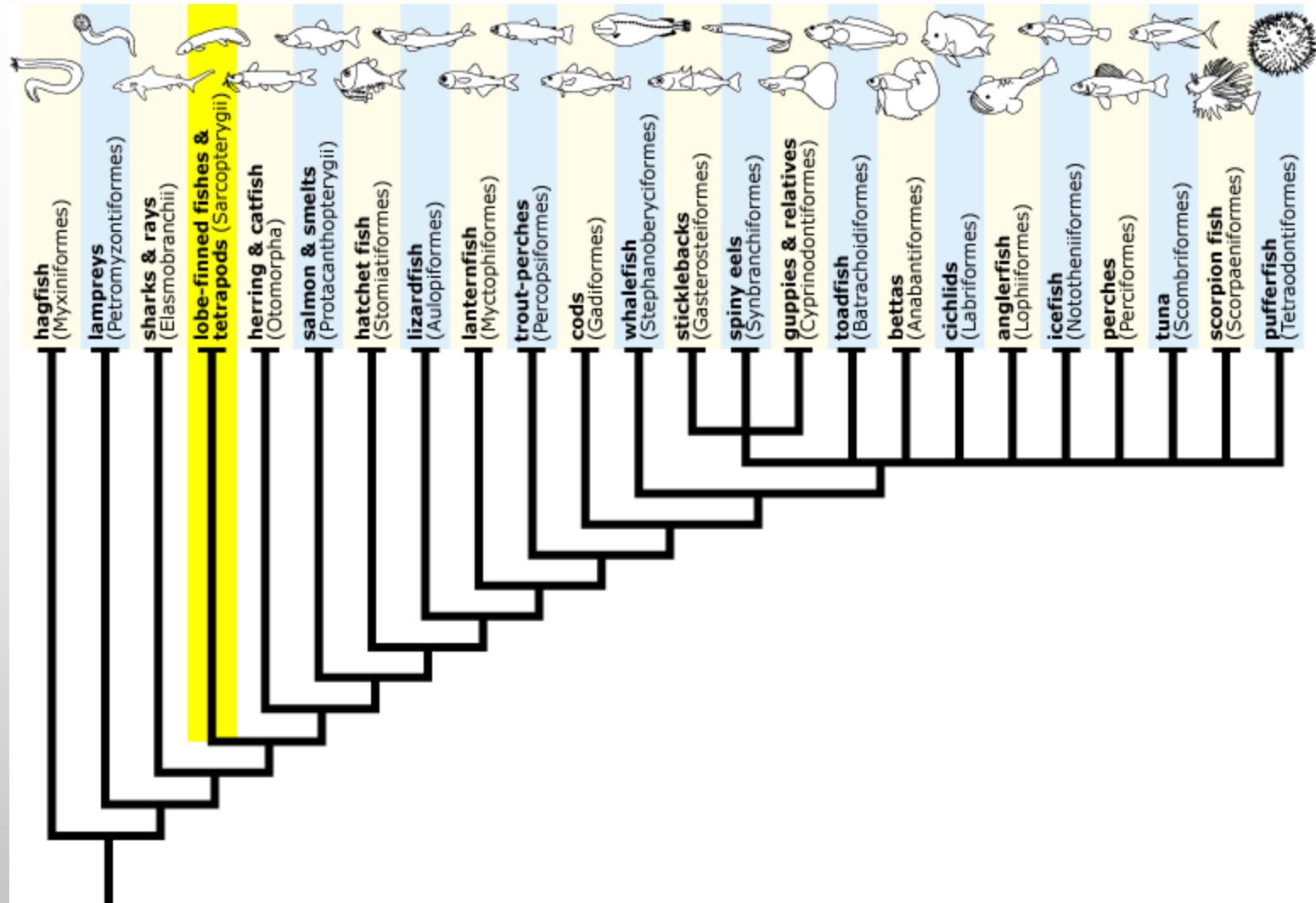


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The term fish is a convenient term used to refer to diverse aquatic organisms, such as lampreys, sharks, coelacanths (SEE-luh-kanths), and ray-finned fishes — but it is not a taxonomic group that would be used in a phylogenetic classification scheme, as "vertebrates" or "hominids" is. That's because phylogenetic taxonomic groups must be clades. A clade is a group that includes all the descendents of a common ancestor and that ancestor, and all the different organisms that we think of as fish don't form a clade. Look at the phylogeny here. Almost everything you see on this phylogeny is a fish — with one exception. The lobe-finned lineage (technically called the Sarcopterygii, sar-KOP-tuh-RIJ-ee-eye) includes both the lobe-finned fish and four-legged vertebrates, like frogs, dinosaurs, bats, and us humans! Because this non-fish lineage is nested within a bunch of fish on the tree of life, the fish do not form a clade.



https://evolution.berkeley.edu/evolibrary/article/fishtree_02

CLASSIFICATION OF FISHES

Fish has an obvious head, which includes brain and nervus centralis in notochord. Visual, auditory, olfactory, gustatory and tactile organs locate near the brain in head. Fish is classified as the most advanced group among animals. As there is a great variety of axial skeleton to protect the central nervous system and support the body- cranium and vertebra, which are called vertebrates; for other animals without vertebra, they are classified as invertebrates, which belong to lower class.

Why need to classify? Meaning of Classification

Methods and Practices of Classification

Taxonomy Units

<http://www.hkis.hk/en/research/subject/fishtaxonomy/>

References

[Stoskopf, M. K. \(1993\). *Fish medicine* \(No. V609 STOf\).](#)

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