

Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Third Year)

Subject: Zoology

Paper Code: ZOD 103

Paper Title: Fish and Fisheries

Unit: 02- Morphology, Physiology and Behaviour.

Module Name: Types of fins and their modifications

Module No: 07

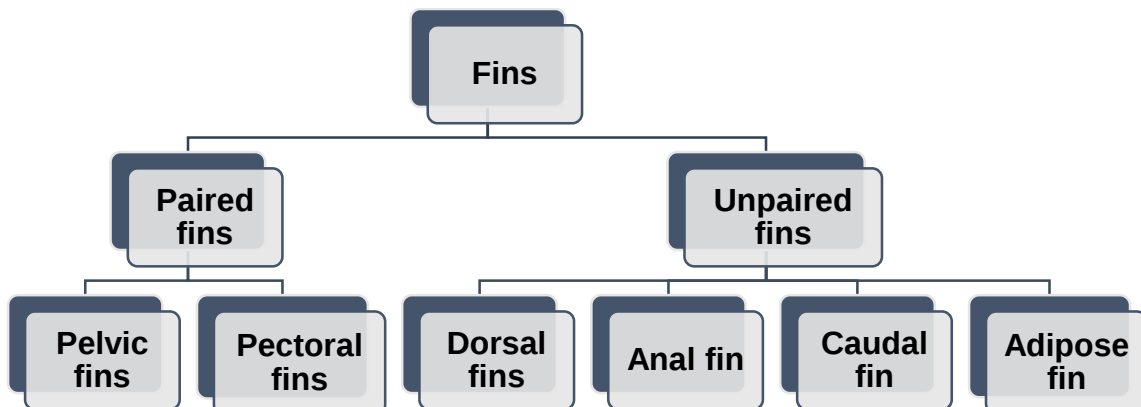
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Notes

Fins: The chief organs of locomotion in fishes. These are either folds of skin or projections from the body surface. There are mainly two types of fins in fishes :1. Paired fins and 2. Unpaired fins.

1. **Paired fins:** the paired fins are the pectoral and the pelvic fins
2. **Unpaired fins:** also called as median fins and these include the dorsal fin, anal fin, caudal fin and the adipose fin.

The categorisation of types of fin is also illustrated in the below chart.



Paired fins are of the following two types

1. Pelvic fins
2. Pectoral fins

1. PELVIC FINS

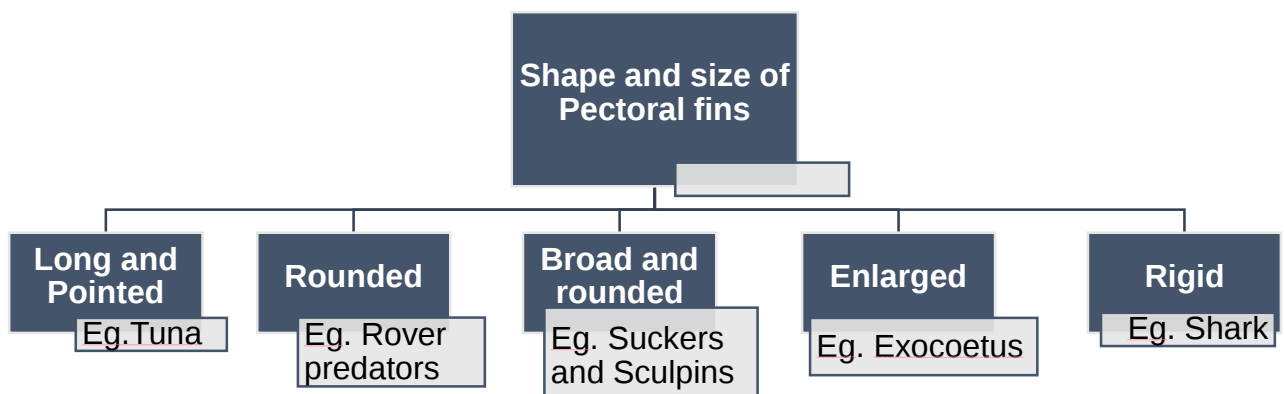
These fins are present on the ventral side **of** the fish and the most variable of the fins in terms of position. These fins may be present in the following positions:

- a) **Abdominal position:** The fins are located ventrally towards the abdominal position or the rear end of the fish. These fins assist in steering and braking. Example Salmon, Shad, and carp.
- b) **Thoracic position:** The pelvic fins are more anterior, below the pectoral fins. Example deep bodied fish.
- c) **Jugular position:** The pelvic fins are present in front of the pectorals.

In eels and eel like fish, the pelvic fins are absent or greatly reduced in size. In a part for ease of squeezing through tight places. In bottom dwelling fish, the pelvics are frequently modified into organs for holding on to the substrate.

2. PECTORAL FINS

These fins are located high up on the sides of deep-bodied fish, which depend on precise movements for picking prey from the bottom or the water column. These fins are also present towards or below the midline of the fish. E.g. Rover-predators. The variation on the size and shape of the Pectoral fin is illustrated in the below chart.



➤ **UNPAIRED FINS**

1. DORSAL FINS AND ANAL FINS

Long dorsal fins are present in rover predators and deep-bodied fish to provide stability while swimming. Long dorsal and anal fins are present in eel-like fish. Their fins frequently run most of the length of the body and may unite with the caudal fin. The number of these fins may vary from one, two or even three depending the species of fish

2. CAUDAL FIN

Caudal fin is also called as Tail fin. Fishes consists of very well developed caudal fin except a few such as in *Hippocampus* the tail fin is modified to Prehensile tail, in bottom dwelling rays the tail is reduced and is lacking in Sting rays.

The caudal fin is classified into the following three main types

a) **Diphycercal Caudal Fin**

b) **Heterocercal Caudal Fin**

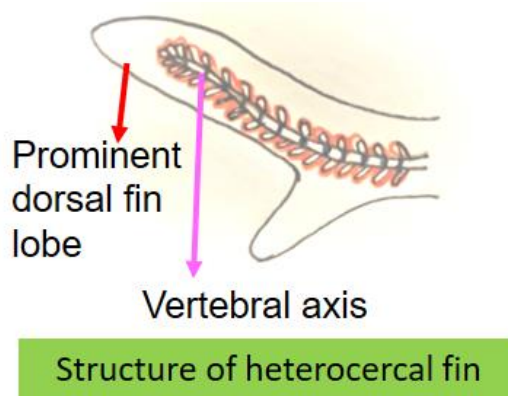
c) **Homocercal Caudal fin**

a) **DIPHYCERCAL CAUDAL FIN**

This fin is also known as Protocercal caudal fin and is regarded as the most primitive type of caudal fin. In this type the vertebral column extends up to the tip of the tail and divides the tail into two equal halves i.e the dorsal half and the ventral half. The dorsal half is called Epichordal lobe and the ventral half is known as Hypochordal lobe. The epichordal and the hypochordal are both equal in size and symmetrical. This type of caudal fin is not exhibited by many living fishes. Diphycercal caudal fin occurs in Primitive sharks, Chimaera (Isocercal), Lung fishes, Latimeria etc.

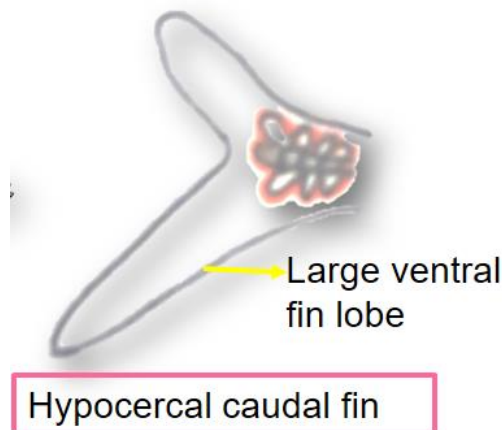
b) **HETEROCERCAL CAUDAL FIN**

This is an Intermediate type of caudal fin wherein the vertebral column bends upwards and reaches up to the tip of the more prominent dorsal lobe and thus resulting into an asymmetrical caudal fins. This fin is the Characteristics of bottom dwellers.



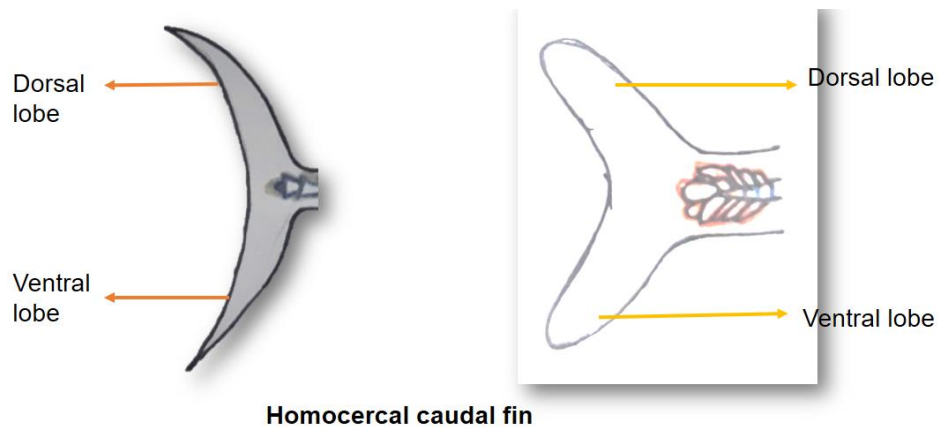
c) HYPOCERCAL CAUDAL FIN

In hypocercal caudal fin, the vertebral column terminates into a larger ventral lobe. This fin is more peculiar in flying fish, Some primitive Fishes etc..



3. HOMOCERCAL CAUDAL FIN

It is the advanced and the most common type of Caudal fin. This fin is Symmetrical externally but asymmetrical internally. The posterior end of vertebral column is turned upwards and becomes greatly reduced. The tip of vertebral column does not reach the posterior limit of fin. There is no apparent dorsal lobe but the ventral lobe is greatly enlarged and divided into two equal superficial lobes. Most of the teleosts retain the typical homocercal condition.



Homocercal caudal fin is further categorised into the following types:

- i. **GEPHYROCERCAL CAUDAL FIN**
- ii. **ABBREVIATED HOMOCERCAL CAUDAL FIN.**

i. **ABBREVIATED HOMOCERCAL CAUDAL FIN**

In this type the vertebral column is a bit elongated and upturned, also with or without an upturned fleshy lobe. Most of these variations represent an intermediate stage between the heterocercal and homocercal types. This type of fin is present in *Polypterus*, *Amia*, *Lepidosteus* etc.

Abbreviated Homocercal Caudal Fin



ii. **GEPHYROCERCAL CAUDAL FIN**

In this type, the caudal fin completely disappears such as in *Fieraspis* and *Orthogoriscus*.



➤ **ADIPOSE FIN**

It is a fleshy dorsal appendage and is found in Trouts, Smelts, lantern fishes, catfishes and characins. It may have an important function in swimming of fish during the postlarval stage of development, when other fins are poorly developed.