

***BASUDEV GODABARI DEGREE COLLEGE, KESAIBAHAL***

***DEPARTMENT OF ZOOLOGY***

***SELF STUDY MODULE***

***MODULE DETAILS -***

***.CLASS-3<sup>RD</sup> SEMESTER***

***.SUBJECTNAME- ZOOLOGY***

***.PAPER NAME-DIVERSITY & DISTRIBUTION OF CHORDATES***

***UNIT-2-- STRUCTURE-***

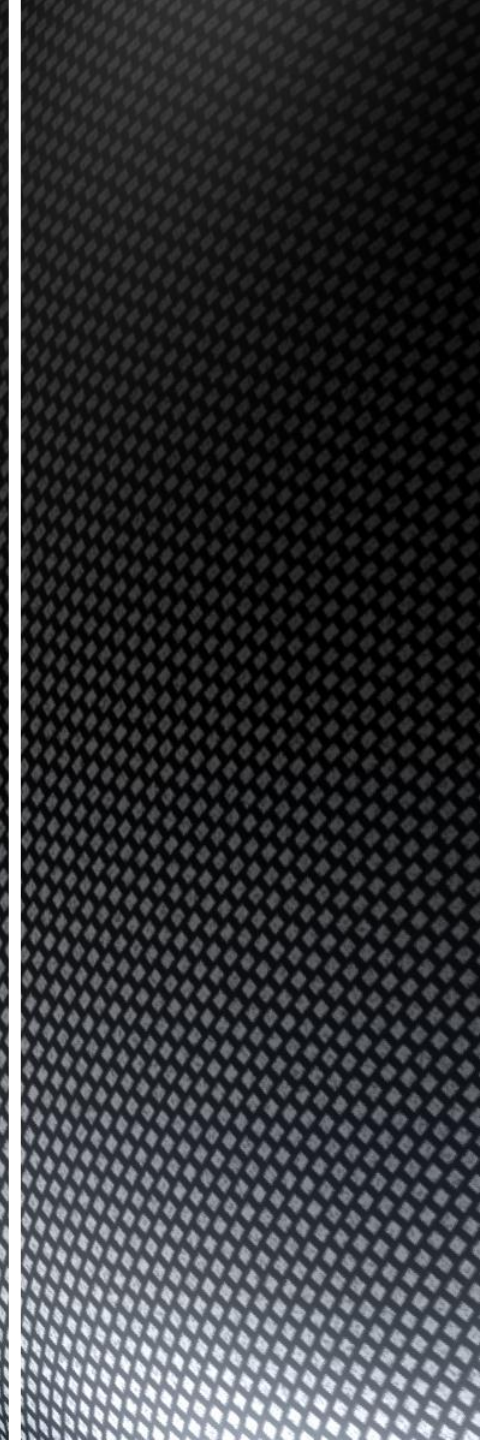
***AGNATHA, PISCES & AMPHIBIA***

***TOPIC-MIGRATION IN FISHES***

***PREPARED BY --BINOD BIHARI PRUSETH***

***DESIGNATION- LECTURER IN ZOOLOGY***





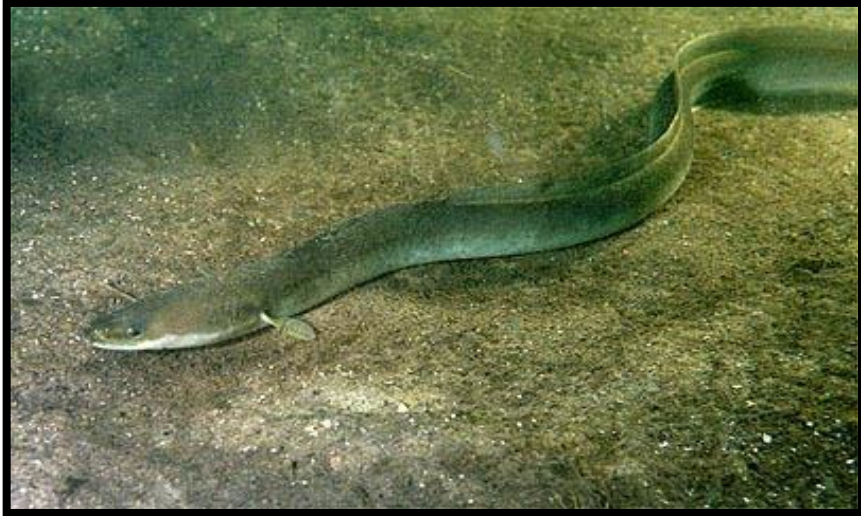
# Migration of Fish

Long journeys taken by fishes from one place to another and back.

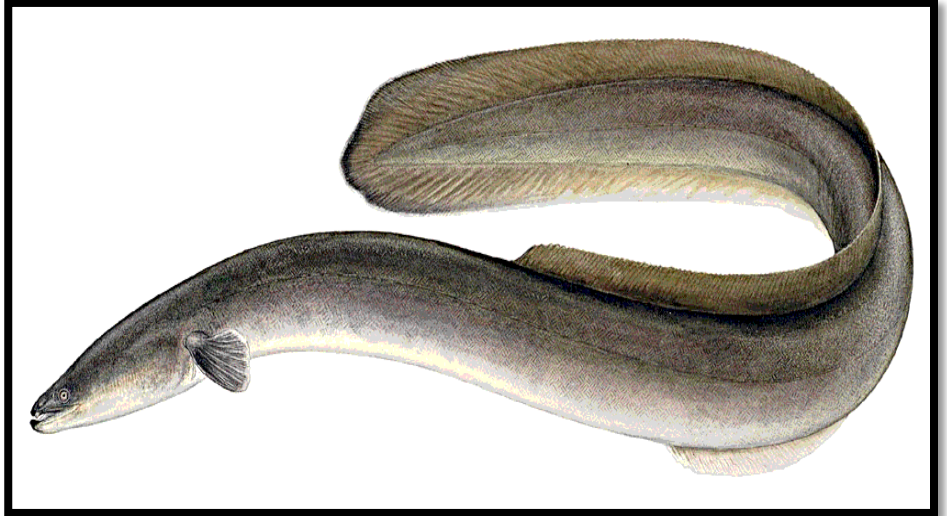
## Reasons for migration

- (i) Feeding
- (ii) Overcome environmental extremes
- (iii) Sexual maturity
- (iv) Hormones
- (v) Instinct
- (vi) Predators and competition

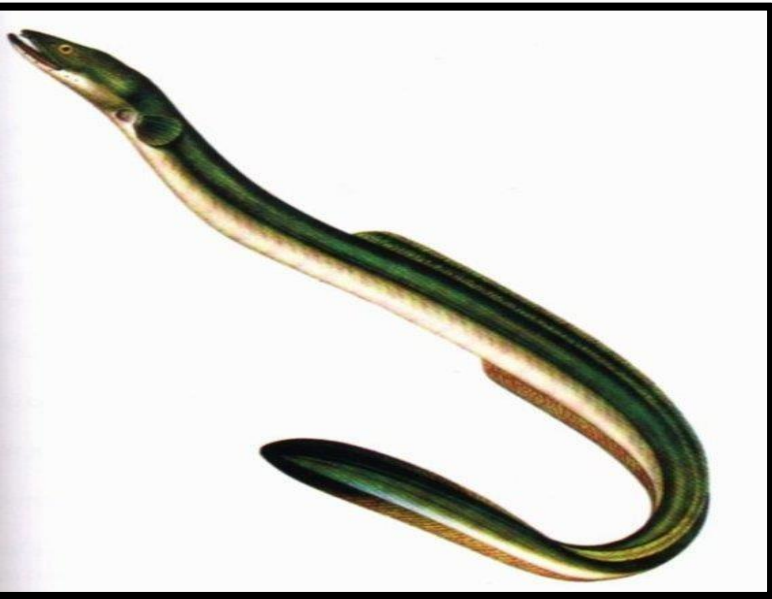
# Migratory fishes



*Anguilla anguila*



*Anguilla rostrata*



*Anguilla vulgaris*

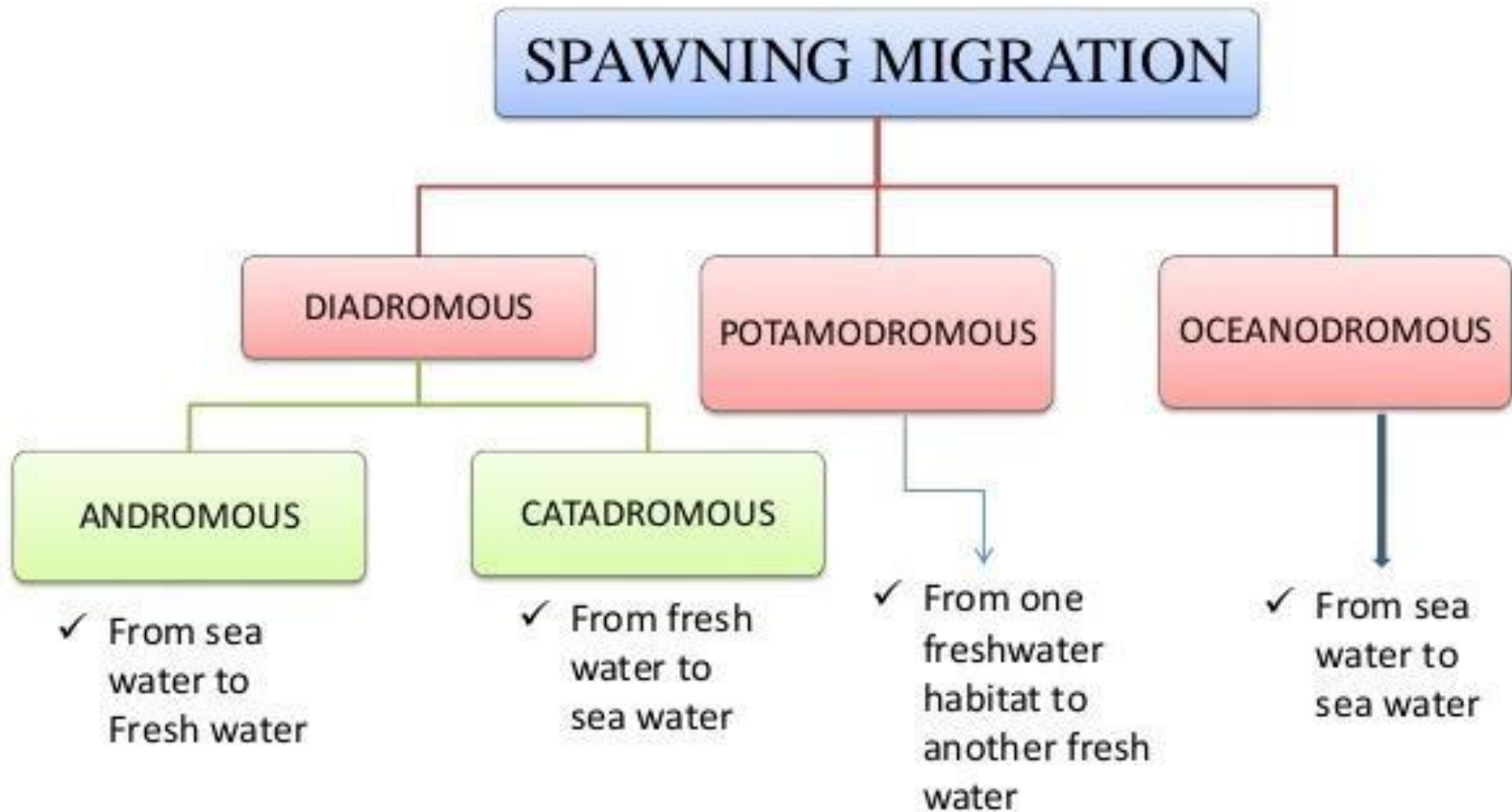


*Salmo salar*



*Hilsa hilsa*

# Types of Migration



# Types of Migration

- (i) Latitudinal migration – north (spring) and south (autumn).
- (ii) Oceanodromous migration – from native place to a far off place. Eg. Tunas, mackerels, etc.
- (iii) Potamodromous migration – long movement within fresh water. Eg. Carps, trouts.
- (iv) Catadromous migration – from fresh water to sea water for spawning (fresh water fishes). Eg. Eels.
- (v) Anadromous migration – from sea water to fresh water (marine fishes). Eg. Salmons, Indian shad.

# Type of Fish Migration



Sword fish (Latitudinal migration)

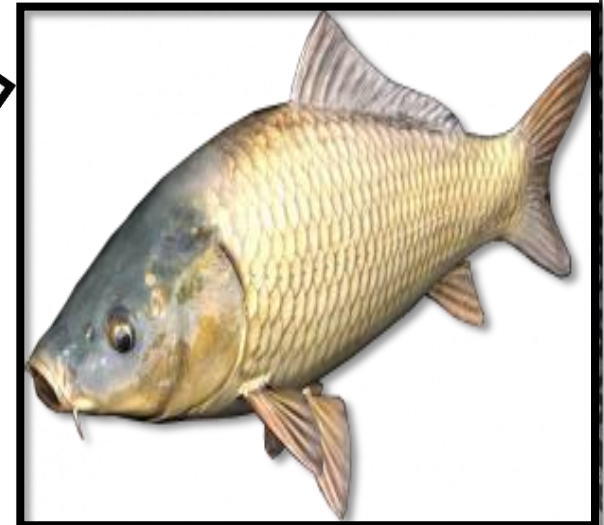
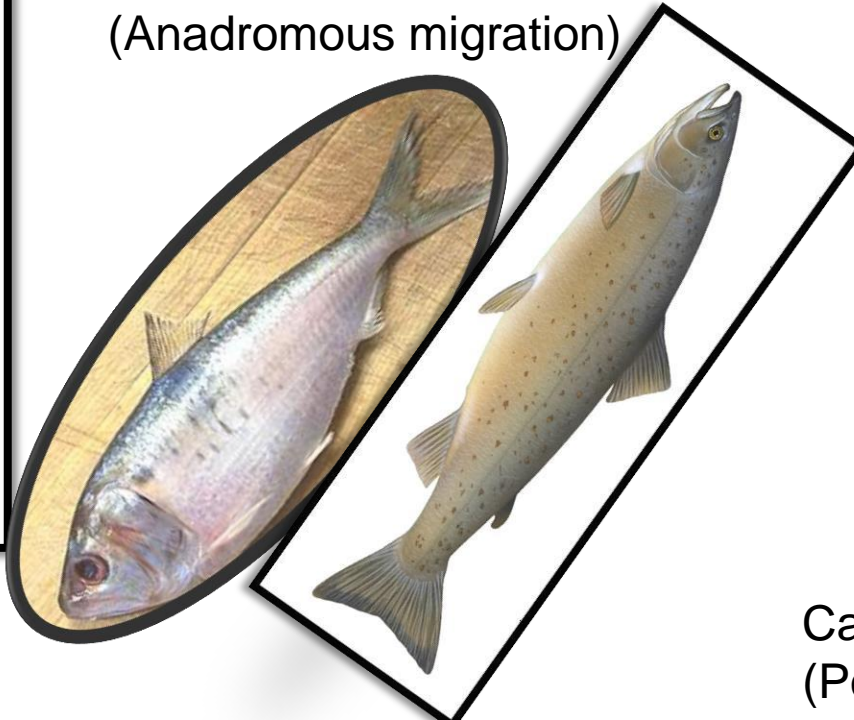


Tunas (Oceanodromous migration)



Eel (Catadromous migration)

*Hilsa hilsa* & *Salmo salar*  
(Anadromous migration)



Carp & Trout  
(Potamodromous migration)



# Eel migration (Catadromous migration)

Four phases of life of Eel:

- (i) Adult yellow coloured eel (in rivers).
- (ii) Silver grey coloured eel (ready for migration).
- (iii) Pelagic larval phase (Leptocephali).
- (iv) Metamorphosis of pelagic larval phase to Elver's larva.

# 4 Phases of Eel Life Cycle



**Phase 1: Adult yellow eel**



**Phase 2: Silver grey eel ready for migration**



**Phase 3: Larval phase of eel  
(Leptocephalus larva)**



**Metamorphosis of Leptocephalus to Elver's  
larva (Glass eel)**

# Salmon migration (Anadromous migration)

*Marine fish, migrates to fresh water for breeding.*

*In winter, pair of salmon migrates from sea water to fresh water and stop feeding.*

*Then, sexual dimorphism appears and they spawn.*

*After hatching, larval fish feed and migrate back to sea.*

*Other anadromous fishes : acipenser, hilsa, alosa.*

## Fishes showing seasonal migration

- *Thunnus (Tuna fish) in Mediterranean sea.*
- *Scomber (mackerel fish) in north Atlantic sea.*
- *Clupea (herring fish) in colder parts of Atlantic ocean.*

# **Petromyzon (sea-lamprey) migration (Anadromous migration)**

*They inhabit coastal waters of north America, Europe, West Africa and Japan.*

*They ascend rivers in spring or early summer.*

*A pair seeks clear, moderately fast flowing water, and builds a nest there.*

*A single female can lay 236,000 eggs.*

*Eggs hatch in about 3 weeks.*

*Larval life extends from 5-8 year.*

*Reaching the sea, they take to parasitic life.*



Ammocete larvae in fresh water



Adult lamprey attached to trout fish in sea water