
Migration of Fishes
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Migration of Fishes

What is Migration?

Migration is the movement of large number of animals from one place to another for feeding, reproduction or to escape weather extremes.

Basis of Migration

- Migration is the movement of large number of animals from one place to another for feeding, reproduction or to escape weather extremes.
- In fishes various types of migratory movements are seen on a regular basis, on a particular time scale ranging from daily to annually or longer, and over a distance ranging from few meters to thousands of kilometers.

Types of fish migration

On the basis of their needs:

1) **Alimentary or Feeding migration:** Migration for search of feeding ground. It occurs when food resources get exhausted.
2) **Gametic or spawning migration:** It occurs during breeding season in search for the suitable spawning ground.
3) **Climatic or seasonal migration:** Migration in search for suitable climatic condition.

Types of fish migration

4) **Osmo -regulatory migration**: Migration for water and electrolytes balance from sea to fresh water and vice- versa.
5) **Juvenile migration:** It is larval migration from spawning ground to the feeding habitats of their parent.

Movement of fishes during the migration

- **Drifting movement:** It is a passive movement of fish along with water currents.
- **Dispersal movement:** It is a random locomotory movement of fish from a uniform habitat to diverse direction.
- **Swimming movement:** It is an orientated movement of fish either toward or away from the source of stimulus.
- **Denatant and Contranatant movement:** It is an active swimming movement. Denatant movement is swimming with the water current while Contranatant movement is swimming against water current

Types of fish migration

- The migration of some fishes is a regular journey and is truly an innate animal behavior. Many fish migrate long distances to spawn.
- These migrations are classified into following categories.

A. Diadromous migration
B. Potamodromous migration
C. Oceanodromous migration
D. Latitudinal migration
E. Vertical migration
F. Shoreward migration

Diadromous migration

It is the migration of fish between sea and fresh water.

- We know, most of the fishes are restricted to either fresh water or sea water. Changes in habitat may cause osmotic imbalance in those fishes.
- However, some fishes regularly migrate between sea and fresh water and have perfect osmotic balance; they are the true migratory fish.

Diadromous migration

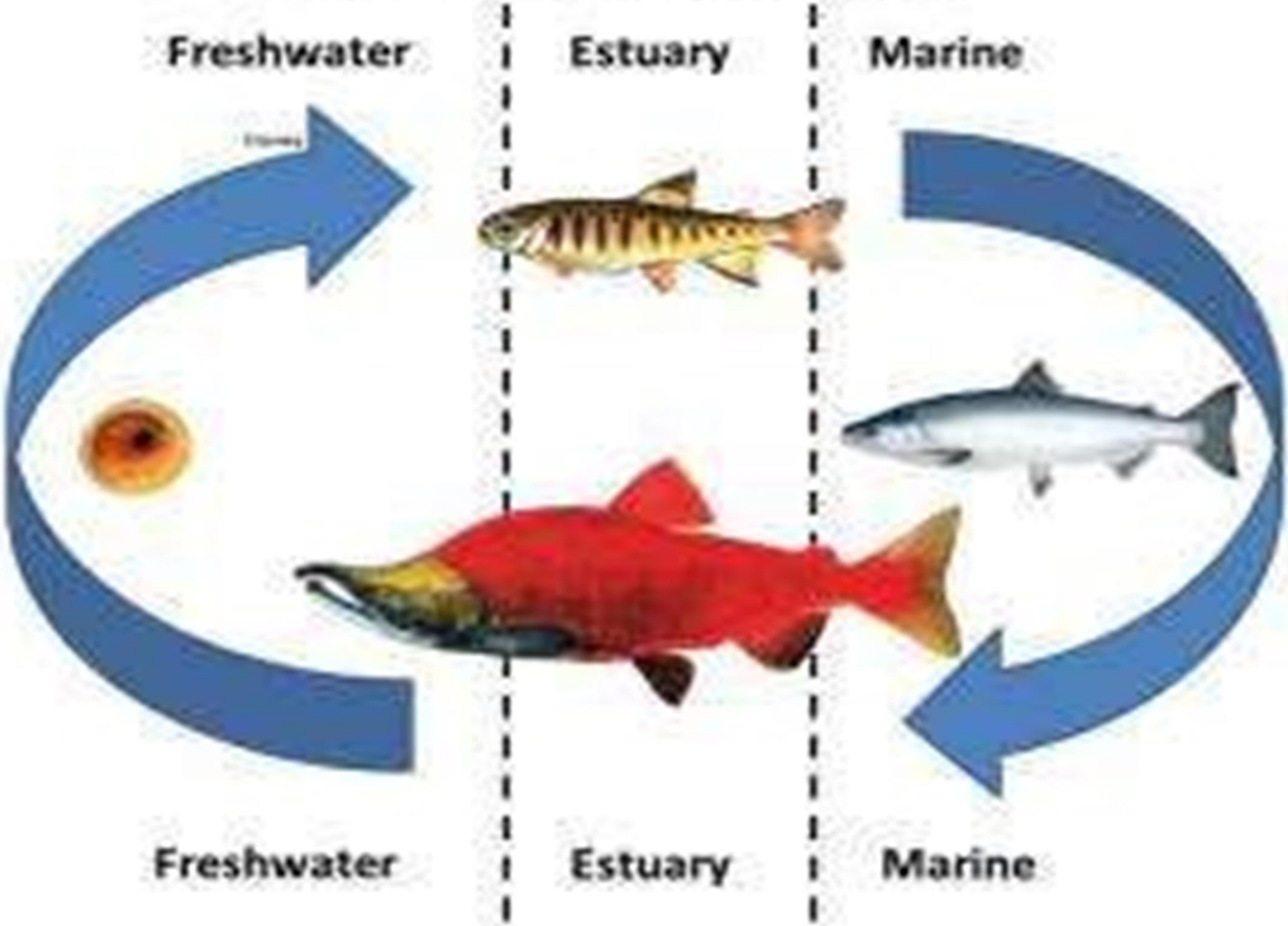
Diadromous migration is of two types

i. **Anadromous migration**
ii. **Catadromous migration**

Anadromous migration

- It is the migration of marine fishes from sea to fresh water for spawning.
- Fishes spend most of their life living and feeding in sea.
- They only migrate during breeding season to the river for spawning ground.
- Ex. Salmon, Hilsa, Lamprey, American shad etc.

Anadromous Life Cycle



Migration of Salmon fish

Salmon migrate for breeding during winter from sea to river. While migrating, some physiological changes occurs:

i. **Stops feeding during journey.**
ii. **Changes color from silver to dull reddish brown.**
iii. **Gonads mature.**

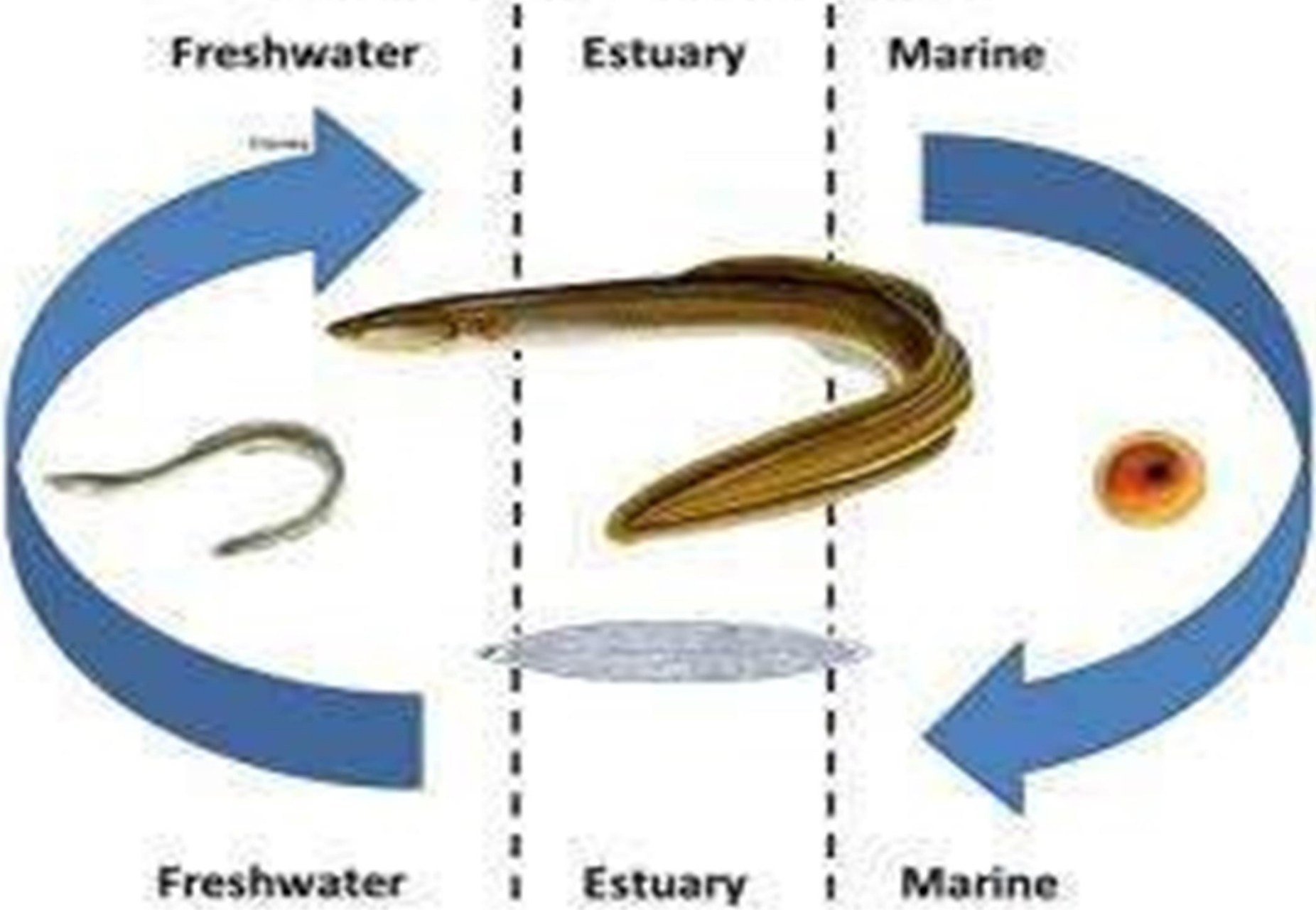
- They select suitable spawning ground and make a **saucer-like nest.**
- In which female lays eggs and male releases smelt over them.
- Juvenile larva hatched out from the egg known as Alevins (a newly hatched salmon when still attached to the yolk sac).
- Alevins then transform into a juvenile fish called **Parr** and metamorphose into adult when return to the sea.

Catadromous migration

It is the migration of fresh water fishes from river to sea during breeding season for spawning.

Ex. Eels

Catadromous Life Cycle



Migration of Eel

Both European eel *(Anguilla or Anguilla vulgaris)* and the American eel *(Anguilla rostrata)* migrate from the continental rivers to Sargasso Sea off Bermuda in south Atlantic for spawning, crossing Atlantic Ocean.

Migration of Eel

Physiological changes

- Deposit large amount of fat
- **Color changes from yellow to metallic silvery grey.**
- **Digestive tract shrinks and stops feeding**
- **Eyes get enlarged and vision sharpens. Other sensory organs also become sensitive.**
- **Skin serves respiratory organ.**
- **Gonads get matured and enlarged.**

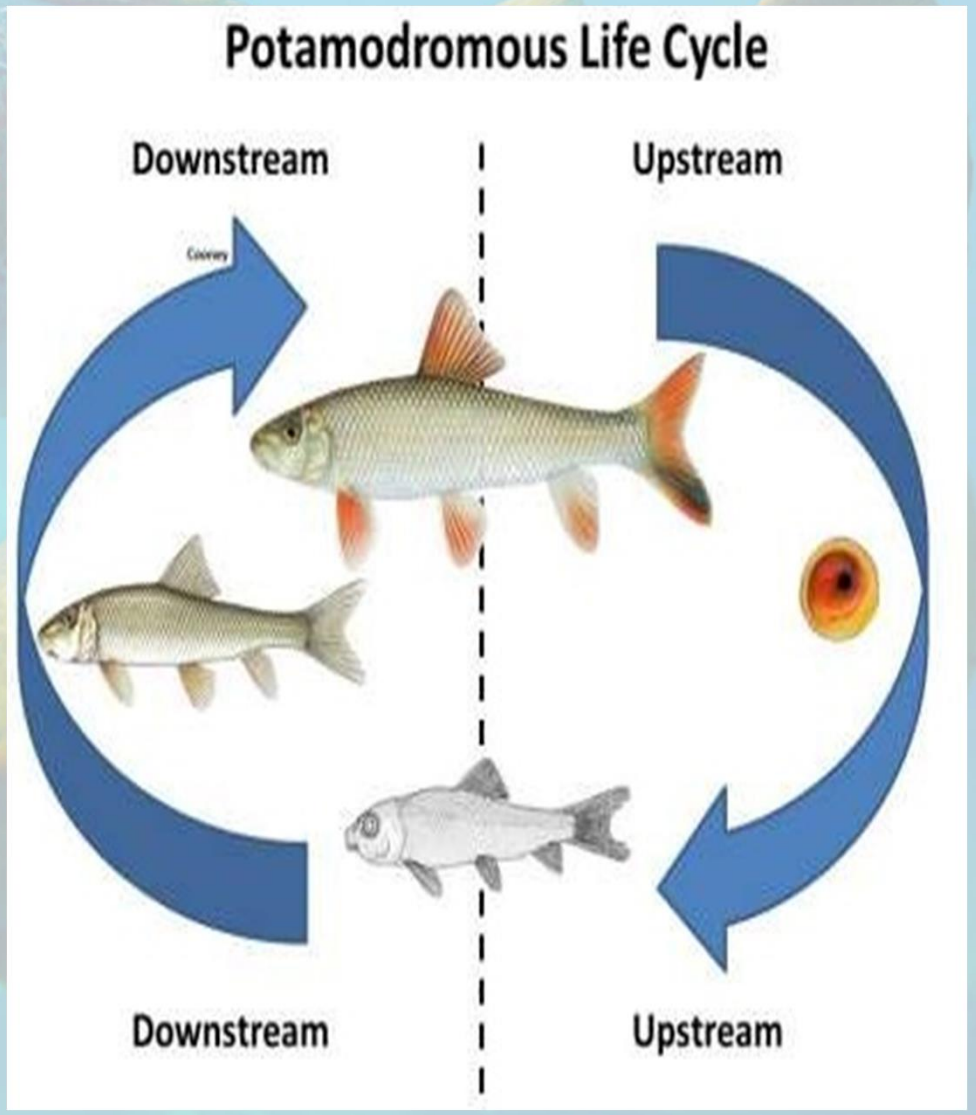
Migration of Eel

- ✓ The lay eggs in suitable spawning ground and are fertilized by males.
- ✓ After spawning they die.
- ✓ The larva's hatches out and develops into young ell and finally return to river.

Potamodromous migration

Migration is limited to freshwaters only.

- It is fresh water migration of fishes from one habitat to another for feeding or spawning
- Ex. Carps, catfish

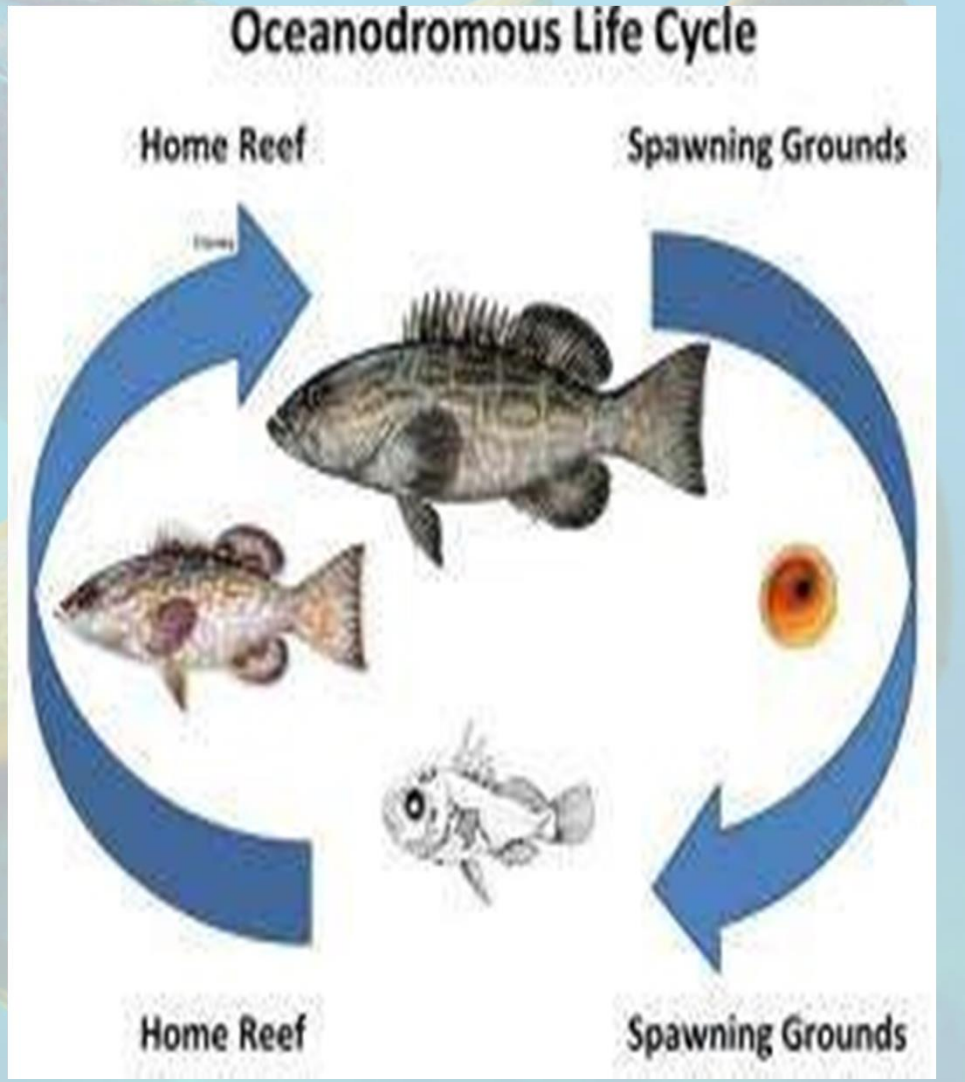


Oceanodromous migration

It is the migration of fish within sea in search of suitable feeding and spawning ground.

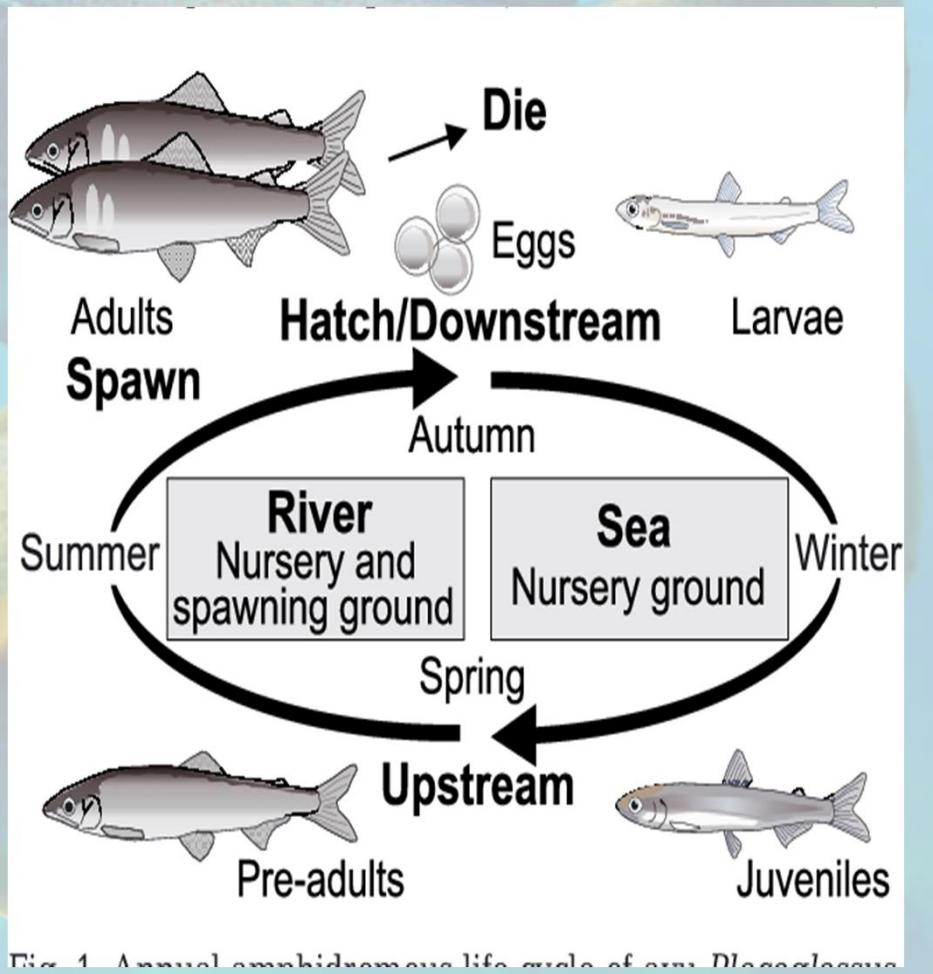
- Fish are born near spawning grounds, then drift on ocean currents as larvae before settling as juveniles to grow into adults before migrating back to spawning grounds.

  ex. *Clupea, Tuna*



Latitudinal migration

- It is the migration of fish from north to south and vice-versa.
- It is a climatic migration.
- Ex. Sward fish migrate north in spring and south in autumn



Vertical migration

- It is a daily migration of fish from deep to the surface and vice-versa for food, protection and spawning.
- E.G. Sward fish usually move vertically downward to greater depth for food.

Shoreward migration

- It is the migration of fish from water to land. However, it is a temporary migration.
- Ex. Eel migrate from one pond to another pond via moist meadow grass.

Significance of fish migration

- To find suitable feeding and spawning ground
- **For protection from predators**
- **Survive from extreme climatic conditions**
- Increases genetic diversity
- **It is an adaptation characters for survival and existences**


Thank You