

MIGRATION IN BIRDS

Migration is a periodic passing of animals from one place to another. Birds migration is a two-way journey from the home to the new places and back journey from the new place to the home. It happens during the particular period of the year or from a breeding and nesting place to a feeding and resting place. (Hilty 1962)

A/c to L. Thomson (1926) bird migration is changes of habitat periodically recurring and alternating in direction, which tend to secure optimum, environmental conditions at all times.

Types or Kinds of Migration

All birds do not migrate, but all species are subject to periodical movement of varying extent. Migration in birds take place in a variety of way in the following manners—

1. Latitudinal migration !→ It means the movement from north to south and vice versa. These are pronounced in northern hemisphere, having large land masses. The birds live here for nesting and feeding during summer and they move towards south during winter.

Several north American and Eurasian birds cross the equator to spend winter in deeper, ^{warmer} parts of South America and Africa.

Pro ex. The ~~god~~ golden plover (*Pluvialis dominica*) of America passes the chilled nine months, 8000 miles away south in the Pampas of Argentina.

Some birds of Siberia visit the plains of Himachal in India.

An opposite but lesser movement occurs in the southern hemisphere where the seasons are reversed.

2. Longitudinal migration! → Some birds migrate from east to west and vice versa. Ex. Starling (*Sturnus vulgaris*) migrate from a breeding area in east Europe or West Asia towards the Atlantic coast to avoid winter.

3. Altitudinal Migration! → Such migration occurs in mountainous regions in temperate regions. The birds inhabiting the mountain peak migrate to low lands during winter e.g. Golden plover. It is simply a dispersal and called vertical migration.

4. Partial migration! → In this type, all the members of a group of birds do not take part in migration. Only a small group of birds take part in migration. e.g. barn owls (*Tyto alba*), blue birds and blue jays of Canada and N. America northern parts of U.S. travel southwards to mingle with the sedentary population of the southern states.

5. Total migration! —

When all the members of a species migrate it is called total migration.

6. Vagrant or irregular migration -

When some of the birds of a group disperse to a short or long distance from their home for safety and food it is called vagrant or irregular migration. e.g. Herons, Spotted eagle etc.

7. Seasonal migration :-

Some birds migrate at different season for food or breeding called seasonal migration. e.g. cuckoos, Swifts, Swallows etc.

8. Nocturnal and Diurnal migration

Many large birds like crows, robins, hawks, Pelicans, cranes migrate during daytime for food. These birds are called diurnal birds and they generally migrate in flock.

Some small-sized birds of Passerine groups (sparrows, warblers) migrate in darkness ~~and~~ for safety. These are called nocturnal migration.

CAUSES OF MIGRATION

The actual cause of migration are not clearly known but the following factors may be related to the phenomenon of migration.

① Instinct and Gonadal changes! →

It is widely accepted that the impulse for migration is possibly instinctive

and the migration towards the breeding ground is associated with gonadal changes.

(2) Scarcity of food :- Scarcity of food produce endocrinal changes which initiate bird migration.

(3) Photoperiodism :- The day length (Photoperiodism) affects pituitary and pineal glands and stimulate growth of gonads. Gonadal sex hormones are the stimulus for migration. e.g. Siberian crane, geese, swan coming from Central Asia, Himalaya begin to return from March onwards with the increase of day length.

(4) Seasonal variations - The north to south migration of birds takes place under stimulus from the internal condition of the gonads which are affected by seasonal variation.

(5) Acc to Roman and Junco the light plays an important role in the development of gonads which has indirect role on migration.

The instinctive behaviours like migration, breeding, moult are phases occurrence in the annual cycle which are possibly controlled by the endocrine system.

Navigation in birds migration

There are many theories regarding the determining factor of the direction and course of migration in birds.

1. Visual landmark :- Some of the birds use the topographical features or landmarks, such as great rivers, river valleys, coastal lines, islands, mountains etc as means to determine the directions and course of migration.
2. Earth's magnetic field :- Acc to Jeagley in 1947 and 1951 the birds navigate through responses to the earth's magnetic field. The coriolis force produced by the rotation of earth guide the migration of birds. But there is no reliable evidence of this theory.
3. Experience :- Some naturalist have suggested that the birds learn by experience. eg swan, geese and cranes. But it is not applicable in all species where old and young migrate at different times and young start ahead of the adult.
4. Celestial bodies :- Kramer (1949) claimed that the birds are guided by the position of the sun as compass for orientation. eg migration of Starling. They possess a time sense or internal clock which allows them to take account of motion of the sun across the sky.
Another ornithologist Sauer

discovered that the migratory birds track and then navigate by the constellation of the stars. Moreover, the migration of birds in relation to sun and stars is subject to some doubts.

5. Homing instinct :- According to their theory, the direction and goal must have been implanted in the birds genetic code and it makes a bird enable to return to the goal.

Advantages of migration

- 1) To avoid harsh climate
- 2) To get better food option
- 3) To secure themselves from the enemy.
- 4) To increase safe breeding ground.

Thus the birds migrate in order to utilize the food supply of both the hemisphere and to exploit new areas for nesting purposes, the condition becomes instrument for them.

