

**Q. 3. Write an essay on migration of birds.**

*(Gorakhpur 1992; Kanpur 86; Agra 82, 86; Avadh 86; Rohilkhand 86; Bundelkhand 87; Garhwal 86, 92; Meerut 83, 95)*

**Write an essay on homing instinct and migration of birds.** *(Meerut 1990)*

From very early times bird migration has been fascinating not only for ornithologists but even for a casual observer of animal life and still it remains a zoological riddle. On certain points more facts are needed and even where facts are abundant they are imperfectly understood.

Majority of birds have the habit of moving from one region to another on the change of season. These birds are known as **migratory birds**. The remaining birds do not migrate at all. These are known as '**resident birds**'.



The migratory birds exhibit every gradation between those who migrate only a few miles to those who cover thousands of miles.

### **Types of Migration**

Broadly speaking, every migratory bird throughout the world leaves a warmer climate or zone to breed in the cool climate. The direction of migration differs and on the basis of direction the migration is differentiated into :

**1. Latitudinal or Vertical Migration :** It includes the migration of birds from plains to hills or from tropical parts to north, temperate and subarctic regions for breeding and nestling, but during winter retire to the south for shelter. The vertical migration is more pronounced in Indian birds. Here a number of species during summer migrate from plains to the slopes of Himalayas ascending thousands of feet above sealevel and return to plains on the commencement of winter e.g. common Woodcock, Bushchat and *Scoloper rusticola*.

**2. Longitudinal Migration :** It includes the migration of birds living in southern hemisphere, which move in east-west direction or from mountainous parts to plains during summer and return to the mountains in winter e.g., the Patagonia plover visits the Falkland Islands and South Patagonia in September and October for breeding.

### **Period of Migration and Seasonal Groups of Migratory Birds**

The time and period of migration may vary for birds of different groups but it is very constant for the birds of a particular variety. Depending upon that, the migratory birds have been classified into the following four groups :

**1. Summer Visitors :** These migrate from the warmer southern parts to comparatively colder northern parts in spring for breeding and nestling and return southwards to their natural haunts in late summer and autumn.

**Examples :** Swallow, Swift, Nightingale and Cuckoo.

**2. Winter Visitors :** These migrate southwards and southwestward, e.g., to the warmer parts in winter and return northwards in spring.

**Examples :** Fieldfare, Redwig and Snowbunting.

**3. Birds Passage :** Certain birds, while migrating to southwards or northwards drop in their way for a short period for rest and relaxation. Thus, they may be seen in these areas either only for few hours or for one or two days.

**Examples :** Great snipe and Sandpipers.

**4. Martial Migrants :** In certain cases all the birds of a group of migratory birds do not leave the native land and hence are always represented by certain individuals. But these individuals are not always the same.

### **Range of Migration**

The range of migration commonly varies from one or few miles to thousands of miles in different groups of migratory birds but it is almost constant for a particular group. Himalyan partridge covers a distance of about one or two miles. Chickodes travel about 8,000 ft. while Swallows and Storks migrate every year



from North Europe to South Africa covering about 6,000 miles and Arctic tern migrates about 11,000 miles from the coast of Labrador to Antarctic.

### Routes of Migration

The migratory birds follow their own definite routes. The route followed may be the same while going and returning back or may be different. The various routes followed are as under :

**1. Sea Routes :** The sea routes are followed by marine birds. The land birds are known to cross as much as 400 miles of ocean in a stroke but if there are intermediate islands the distance covered may be more. The birds are seen crossing the Atlantic Ocean between Azores and Portugal (900 miles) and the ocean between the continents of North America and Bermuda, etc.

**2. Coastal Routes :** The coastal routes afford migration highways for a larger number of migrants. These are East Atlantic coast line, West Atlantic coast line, East Pacific coast line, West Pacific coast line, East Indies coast line and West Indies coast line.

**3. River Valley Routes :** While moving from plains to hill and from hills to plains the migratory birds cross rivers and river valleys falling in the way.

**4. Mountain Range :** Very rarely the birds cross mountain ranges.

The river valleys, mountain ranges and coastal routes afford good landmarks for the migrating birds, which enable the birds to recognize, and remember the routes and entrances to the countries.

### Velocity During Migration

The velocity of flight varies from individual to individual and species to species. Most of them fly at a moderate speed the great persistency, like a trained pedestrian. The moderate speed nearly comes to 30 miles per hour in Cranes, Carrions, Crows and Finches and 38 miles an hour in Cross bills.

### Order of Migration

During migration the birds follow a definite order and this order is strictly followed. Usually the adults migrate first and they are followed by the young. It is usually explained that the urge of migration is usually due to the maturity of gonads which instigate them to migrate towards their breeding grounds. Hence, the adults with ripe gonads start the migration. In the back flight the order is reversed—the young start first and follow the same path which their parents had followed while coming to the original place. In adult precedence, there is always a definite sequence. The adult males take lead, adult females next in order and the birds of the year follow them and in the end come the weak and wounded. Majority of birds start during night and if they pass by day, it is above the range of human vision.

### Regularity of Migration

In spite of abnormal weather, migration of birds falls every year without failure with only a difference of a day or two. Also the migrants always follow the same route year after year and are able to go back and find their older haunts and even the nests which they made in the previous year.



## Problem of Route Finding

It is still a riddle what guides the young ones of migratory birds to migrate and follow the same course which their parents had taken. An Arctic tern born within  $10^{\circ}$  of North Pole leaves home at the age of 6 weeks and finds its way to Antarctic region near about 11,000 miles away; and after passing winter again return back through the same route. Following explanations have been put forward :

1. They utilize various natural structures, such as mountains, rivers, valleys, etc., as the landmarks during flight.
2. Birds during flight are guided by the magnetic effect and are always aware of the direction of pole.
3. Migration is regarded as a social behaviour and those who have followed for years become the leaders in due course of time. But this is not applicable in every case and if possible may be a secondary factor.
4. Migration is an instinct developed due to cumulative inheritance gained by experience.
5. The German ornithologist, **Gustav Kramer**, suggested that birds guide themselves since the birds in cage exhibit restlessness at the time of migration. He said that birds orient themselves in a direction they wanted to migrate and take their route independently and do not learn it from their elders. During night the direction is determined by moon and star patterns. It has also been regarded that birds possess an unusual degree of sense for tracing the direction or are guided by the instincts which impress upon their nervous system in some way or the other.

## Causes of Migration

Several theories have been put forth to explain the causes of migration in birds. A few of them are as under :

**1. Gonadial Stimuli :** It is said that ripening of sex organs in bird causes a physiological change, which leads to an impulse for migration and the bird is evoked to leave its winter quarters and reach the breeding grounds. Rowan (1922) proposed that the migration is stimulated by the hormones secreted by the testes and ovaries.

**2. Environmental Stimuli :** The heat, glare and drought also provoke migration. The external stimuli, like growing scarcity of food, decrease of day length or sun-glare, increased cold and stormy weather, etc., excite birds to migrate to the better suited place.

**3. Thyroid Hypothesis :** The hormones secreted by thyroid gland regulate the metabolic activities of the bird and at the time of migration thyroid hormone produces necessary changes in the metabolic activities which compel the birds to migrate.

**4. Antipituitary Hormone :** The antipituitary hormone regulates the migration and instinct to migrate.

**5. Metabolic Aspect :** Prior to migration fat deposition occurs due to changed metabolic processes. These changed metabolic conditions provoke migration.



### Significance of Migration

Migration is useful to the birds in following respects :

1. Protects the birds from cold and stormy weather or from excessive heat of the season.
2. Provides long hours of day for searching food.
3. Provides abundant food supply.
4. Provides suitable breeding grounds.

But migration is harmful in the following respects :

1. A journey without rest is tiresome for the birds and most of the passive birds succumb at sea.
2. Sudden changes in weather, *i.e.*, pouring of heavy rain or snow or blowing of stormy wind sometimes perish a number of migrants.
3. The young and defenceless birds are exposed to various natural enemies.
4. The telegraphic wires and light houses some time take a great tolls of the migratory birds.