

**Topic: Bird Migration**  
**Class: B.Sc Part –I (Hons.)**  
**Paper- II**  
**Group – A**

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**The following factors may be related to the problems of migration:**

- **i. Instinct and Gonadal changes:**
- It is widely accepted that the impulse to migrate in birds is possibly instinctive and the migration towards the breeding grounds is associated with gonadal changes.
- **ii. Scarcity of food and day length:**
- Other factors, viz., scarcity of food, shortening of daylight and increase of cold are believed to stimulate migration.

- Migration in birds depends upon two important factors— stimulus and guidance.
- Scarcity of food and fall of daylight are believed to produce endocrinal changes which initiate bird migration.

- **iii. Photoperiodism:**
- The increase of day length (Photoperiodism) induces bird's migration.
- The day length affects pituitary and pineal glands and also caused growth of gonads which secret sex hormones that are the stimulus for migration.
- In India, Siberian crane, geese, swan those come from central Asia, Himalayas, begin to return from March and onwards with the increase of day length.

- **iv. Seasonal variation:**
- The north-to-south migrations of birds take place under stimulus from the internal condition of the gonads which are affected by seasonal variation.

- **v. Light:**
- The experiments of Rowan with Juncos (summer visitor to Canada) have established that light plays an important role in the development of gonads, which has indirect role on migration.
- If the gonads undergo regression, the urge for migration is not felt.
- So the seasonal changes in illumination appear to be a crucial factor for determining migration.

- Despite all these suggestions, it is not clear how birds — through successive generations — follow the same route and reach the same spot.
- The instinctive behaviours like migration, breeding, moulting are phasic occurrences in the annual cycle which are possibly controlled by the endocrine system.
- In all migratory birds, accumulation of fat takes place for extra fuel during prolonged flight in migration.