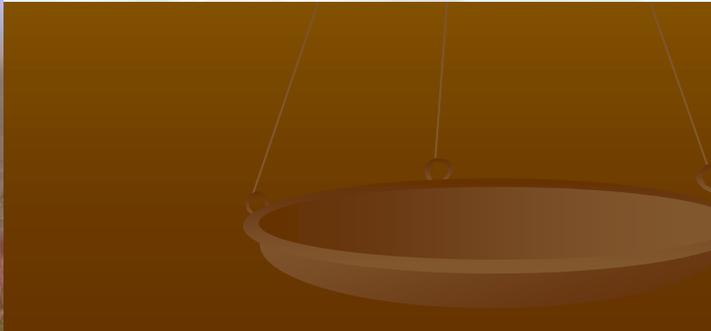


MIGRATION OF BIRDS

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BIRDS

- ❖ Birds are the only animals that have feathers which help them fly. They have two wings instead of arms and two legs.
- ❖ There are nearly 9000 kinds of birds in the world. They are of different colours, shapes and sizes and they eat different sorts of food.

Bird migration

“Migration is the seasonal movements between a breeding location and a location where it survives when not breeding”

These movements are usually irregular or in only one direction and are termed variously as nomadism, invasions, dispersal or irruptions. Migration is marked by its annual seasonality.



Why do birds Migrate?

- ❖ The changing seasons can transform a comfortable environment of a bird into an unlivable one -- the food and water supply can dwindle or disappear, plant cover can vanish, and competition with other animals can increase.



Nature has provided methods for coping with the situation.

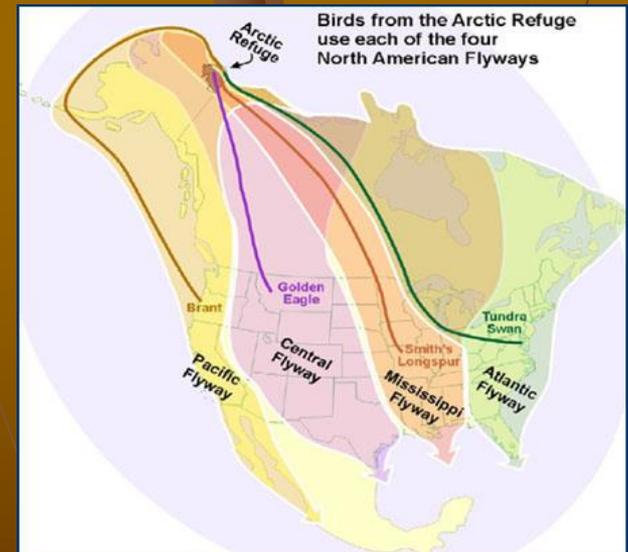
Hibernation: involves entering a dormant state during the winter season.

Migration: involves escaping the area entirely. Because of the powers of flight, most birds adapt to seasonal changes in the environment by migrating.

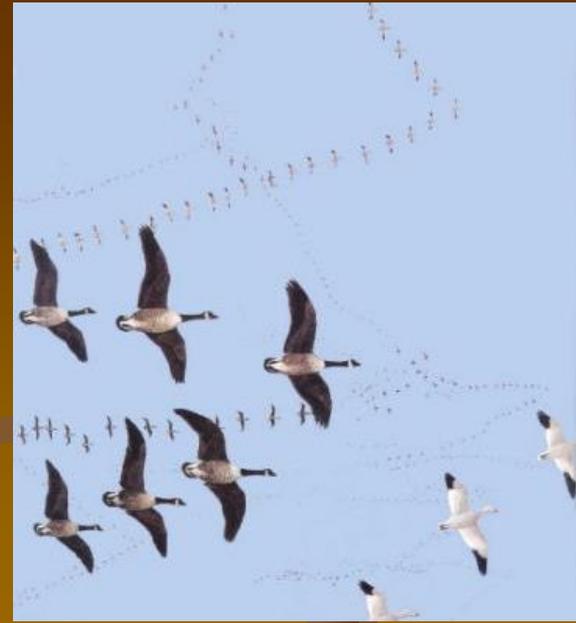


General patterns of Bird Migration

- ❖ The most common pattern involves flying north in the spring to breed in the temperate or Arctic summer and returning in the fall to wintering grounds in warmer regions to the south.
- ❖ In some cases the migration may involve narrow belts of migration that are established as traditional routes termed as flyway.
- ❖ Many of the larger birds fly in flocks. Flying in flocks helps in reducing the energy needed.



❖ Many large birds fly in a V-formation, which helps individuals save 12–20 % of the energy they would need to fly alone.



❖ In contrast, most species of penguin migrate by swimming. These routes can cover over 1000 km.



With regard to periodic seasonal movements, or migration, our birds can be classified as belonging to one of four groups:

Permanent residents: "Residents," are non-migrating birds such as House Sparrows.



Summer residents: Migratory birds such as Purple Martins who arrive in in the spring, nest during the summer, and return south to wintering grounds in the fall.

Winter residents: Migratory birds who have "come south" for the winter to our backyards. White-throated Sparrows.



Transients: Migratory species who nest farther north than our neighborhoods, but who winter farther south; they are "just passing through."

Evolution of Bird Migration



Two Theories about the bird migration have been given:

- ❖ **According to one theory**, the birds spread over the northern hemisphere when it was warm and abounded in food throughout the year.
- ❖ At the onset of ice age these were forced to shift southwards for survival. With the end of ice age, they returned in spring, but had to shift southwards due to sharp establishment of winter and summer seasons.
- ❖ **Another theory** says that the ancestral home of the birds was in tropics, and some went to north to avoid overcrowding and competition during breeding season. After breeding, they return and this became their permanent habit in due course of time.
- ❖ **Migratory behavior continues to evolve because of the changing environment in which the birds live:**

If environmental conditions favor migration, the number of birds that migrate increases;
if conditions permit the birds to stay in one place, the sedentary type predominates.

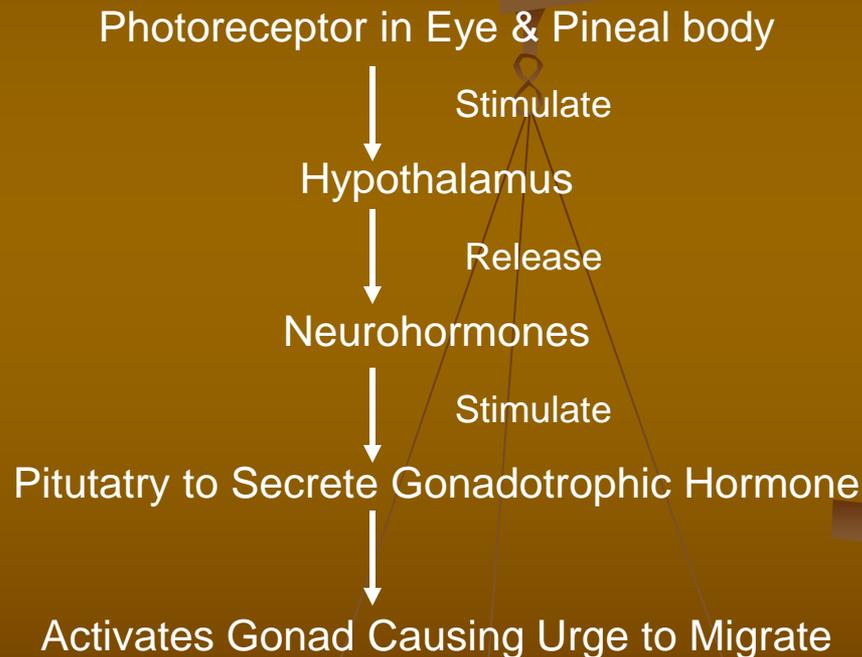


Stimulus for Migration

Two types of stimuli generates the urge for migration in birds.

External Stimulus: Variation in Day Length

Internal Stimulus: Physiological state of Gonads and favorable energy balance.



At the time of regression of gonads birds become insensitive to day length And this insensitivity makes the bird ready for Southward Migration.

Birds Migrating in Flocks or Alone

- ❖ Some species of birds are highly social during migration, moving in flocks.
- ❖ They are generally daytime migrants. Flocks of migrating birds consist of family groups.
- ❖ Flocked migrants include auks and puffins, cormorants, pelicans, ducks and geese, cranes, gulls, terns, sandpipers, plovers and many land birds, including doves, swifts, swallows, larks, pipits, crows, jays, waxwings, blackbirds, and starlings .



- ❖ Often they congregate during migration at a few major stopover or staging areas where food is particularly abundant.



- ❖ An equally diverse array of species seems to migrate in a more solitary fashion, perhaps occasionally forming more or less aggregations with others of their kind, but basically winging it alone.
- ❖ These birds include grebes, most herons, rails, some hawks, owls, nightjars, cuckoos, hummingbirds, kingfishers, woodpeckers, most flycatchers, creepers, wrens, kinglets, thrushes, vireos, wood warblers, and orioles.



TYPES OF BIRD MIGRATION

On the basis of altitude migrations are of two types:

Latitudinal Migration: Migration of birds from North to South and back

Altitudinal Migration: Migration of birds from east to west

On the basis of distance migrations are again of two types:

Long-distance migration: Many northern-breeding birds are long-distance migrants, as they move from their Arctic breeding grounds to far enough south to escape frozen waters.

Short-distance migration: Many species move shorter distances, but may do so only in response to harsh weather conditions.



Swainson's Thrush



Arctic Terns



Northern Pintail

Long-distance migration



Cedar Waxwing



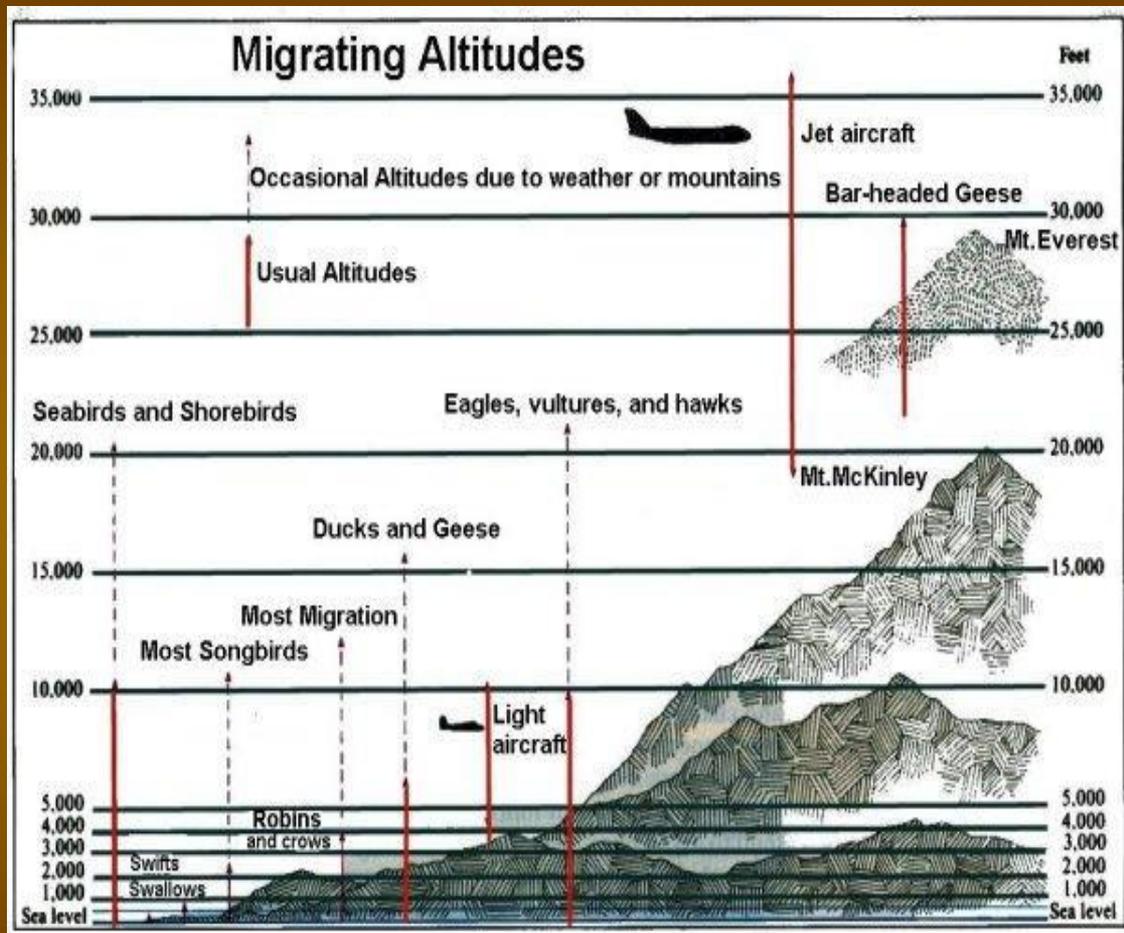
Woodland Kingfisher

Short-distance migration

Factors Affecting Migration Of Birds

Height: Birds behave some what differently from one species to the next, as the songbirds fly at altitudes of less than 5,000 feet, and the majority travel no higher than 2,500 feet.

Weather Conditions: At the beginning of migration, not only are the immediate flight conditions important, but the weather at the destination or starting point of the flight may also be critical to a bird's survival.



Direction and Speed of Wind:

- ❖ One of the most critical weather factors affecting migration is wind direction.
- ❖ Winds blow clockwise around high- and counter-clockwise around low air-pressure systems.
- ❖ Migration tend to be heaviest in areas where the winds blow in the direction the birds are going and lightest where headwinds impede migration.



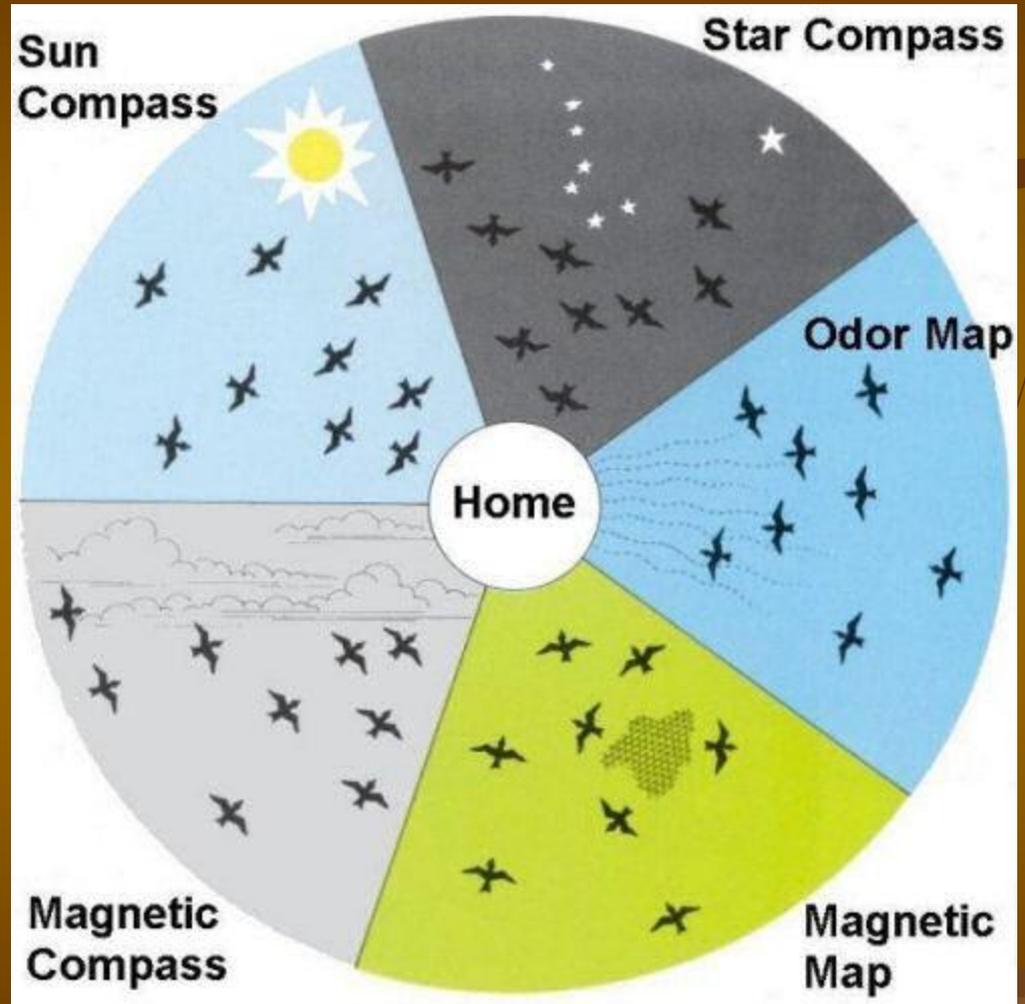
Wind Directions Fall



Wind Directions Spring

Bird Navigational Techniques

- ❖ Sun Compass
- ❖ Star Compass
- ❖ Odor Map
- ❖ Magnetic Map
- ❖ Magnetic Compass



Waterfowl (Snow Geese) Migration



- ❖ The migration pattern of the Snow Geese is typical.
- ❖ It nest in high arctic regions from the North Slope of Alaska, eastward along the coast of northwestern Greenland, and southward along the western and southern shores of Hudson Bay.
- ❖ They migrate southward during the fall in large flocks, flying both day and night at high altitudes.
- ❖ The time of their flight is dependent upon weather. When conditions are right they can cover many hundreds of miles during a single high-altitude flight.
- ❖ Snow Geese spend the winter on the mid-Atlantic coast, the Louisiana-Texas Gulf coast, and in California and the Southwest.



Seabird (Arctic Tern)Migration

- ❖ Seabirds are marvelously adapted for covering great distances over seemingly trackless oceans and, as migrants go, they hold the records.
- ❖ The fabled Arctic Tern nests as far north as open land exists and travels the length of the oceans to winter at the other end of the world.



- ❖ It is a round trip of some 25,000 miles performed every year of the birds life.

Shorebird Migration

➤ Shorebirds, nest on the arctic tundra and migrate to southern wintering grounds.

➤ Classic example, Lesser Golden Plover, spends the northern winter on the vast Argentinian grasslands called the pampas.



- ❖ In spring the golden-plovers migrate northward in flocks, crossing the Caribbean and Gulf of Mexico.
- ❖ They enter the United States mainly along the Texas and Louisiana coasts, and head up through the interior of North America, stopping to feed on insects in pastures and plowed fields of the agricultural Midwest.
- ❖ These long-distance migrants arrive in their breeding grounds in June, and nest during the long days of the brief northern summer.



Advantages of Migration to Birds

By being away from high altitudes during winters they avoid:

- ❖ Cold stormy weather.
- ❖ Shortage of food due to snow fall and freezing of water.
- ❖ Short daylight hours available for search of food.



By returning to high latitudes in summer, the birds get

- ❖ Suitable uncongested breeding grounds.
- ❖ Abundant food due to luxuriant spring vegetation.
- ❖ Long daylight hours for search of food.





THANK YOU

