

BIRD MIGRATION

B.Sc. Semester 3 Zoology Hons. (BB)

Introduction

Birds migrate to move from areas of low or decreasing resources to areas of high or increasing resources. The two primary resources being sought are food and nesting locations.

Birds that nest in the Northern Hemisphere tend to migrate northward in the spring to take advantage of burgeoning insect populations, budding plants and an abundance of nesting locations. As winter approaches and the availability of insects and other food drops, the birds move south again. Escaping the cold is a motivating factor but many species, including hummingbirds, can withstand freezing temperatures as long as an adequate supply of food is available.

Triggers of Migration

The mechanisms initiating migratory behavior vary and are not always completely understood. Migration can be triggered by a combination of changes in day length, lower temperatures, changes in food supplies, and genetic predisposition. For centuries, people who have kept cage birds have noticed that the migratory species go through a period of restlessness each spring and fall, repeatedly fluttering toward one side of their cage. German behavioral scientists gave this behavior the name *zugunruhe*, meaning migratory restlessness. Different species of birds and even segments of the population within the same species may follow different migratory patterns.

Navigation process

Migrating birds can cover thousands of miles in their annual travels, often traveling the same course year after year with little deviation. First-year birds often make their very first migration on their own. Somehow they can find their winter home despite never having seen it before, and return the following spring to where they were born.

The secrets of their amazing navigational skills aren't fully understood, partly because birds combine several different types of senses when they navigate. Birds can get compass information from the sun, the stars, and by sensing the earth's magnetic field. They also get information from the position of the setting sun and from landmarks seen during the day. There's even evidence that sense of smell plays a role, at least for homing pigeons.

Some species, particularly waterfowl and cranes, follow preferred pathways on their annual migrations. These pathways are often related to important stopover locations that provide food supplies critical to the birds' survival. Smaller birds tend to migrate in broad fronts across the landscape.

Different Types of Bird Migration

While the exact birds that participate in different migration patterns can be subject to interpretation and may gradually change as migration patterns evolve, the most common migrations include:

- **Seasonal:** This well-known and widespread migration is predictable based on seasonal changes, as birds move between breeding and non-breeding ranges. The height of these migration periods is during spring and fall, though in some areas the change between wet and dry seasons are migration indicators.
- **Latitudinal:** This migration is between areas of different latitudes from north to south and vice versa. This is the most common migration type with many birds that migrate from the Arctic to the tropics. The exact direction of migration is often determined by geographic features, however, such as mountain ranges, coastlines, and available habitats.
- **Longitudinal:** Similar to latitudinal migration, this type of movement is a change between different longitudes from east to west or west to east. This is a common type of migration for many birds in Europe, where geographic features encourage birds to move longitudinally rather than latitudinally.
- **Altitudinal:** Birds that breed in tall mountains often exhibit altitudinal migration. This type of migration is the move to lower elevations in winter, when harsh weather and deep snowfall may make staying at upper elevations impossible. Birds that use altitudinal migration may not venture far in terms of overall mileage or distance, but just a few hundred feet of elevation can make a great difference in habitats and available resources.
- **Loop:** Birds that follow an annual circle are loop migrants. This migration includes two distinctly different routes to and from breeding grounds, often taking advantage of varied resources at different times of the year. For example, rufous hummingbirds follow a coastal route in spring on their way from Mexico to Alaska but take advantage of mountain wildflowers on an interior southbound route in autumn. Loop migration is also common with many seabirds and shorebirds as they use seasonal variations in wind patterns to aid their flight.
- **Nomadic:** This movement is less predictable and can be erratic depending on available food and water resources. Nomadic birds tend to stay within the same general range but may be completely absent from parts of that range when resources are scarce. They will return, however, when the habitat becomes more suitable, such as after rainfall, when prey is more abundant, or when crops ripen. Types of birds that migrate nomadically include waxwings, phainopeplas, zebra finches, and black swans.
- **Irruptive:** Bird irruptions are highly unpredictable but spectacular migrations that bring large numbers of birds into unusual areas, most often in winter. Unlike nomads, irruptive birds may be found far outside their expected ranges during this type of migration, but the reason is the same: the search for suitable food and water resources. Types of migrating birds that exhibit irruptive patterns include redpolls, varied thrushes, evening grosbeaks, crossbills, and snowy owls.
- **Dispersal:** While not always considered a true migration, bird dispersal is nonetheless relatively predictable and seasonal, though only once in a bird's lifetime. In this

migration, juvenile birds are forced away from their hatching grounds and must seek out their territories as their parents continue to use the same range. This is more common among birds that are year-round residents of the same range and will defend their territories throughout the year, such as woodpeckers.

- Leap Frog: A leap frog or skip migration is a unique pattern where a northern population will migrate a greater distance to skip over a sedentary population of the same species. A year-round range is thus occupied in between the breeding and wintering grounds of the leapfrogging population, but the individual populations do not extensively mix.
- Reverse: Reverse migration is an aberration among migratory birds. It is most often seen in autumn when young birds can become confused or disoriented and instead of migrating along the expected route go in the opposite direction. These lost birds end up as vagrants far from their traditional locations. This is not usually seen with large numbers of birds but is more likely with individuals and isolated sightings, some of which can be quite spectacular.
- Molt: Some birds migrate only to accommodate their annual molting periods. During a molt migration, birds will leave an established range to stay at a safe, secure range while they are vulnerable and less capable of flight, even during brief flightless periods. After the molt is complete, they will return to their regular range regardless of season or breeding readiness. This phenomenon is seen among a wide range of duck species but is not common with other types of birds.
- Drift: Drift migration is a rare but highly anticipated event many birders hope to see. When it happens, large numbers of migrating birds have "drifted" away from their typical migration routes, often pushed by storms. This can result in spectacular fallout events and many rare bird sightings.

Migration Hazards

Taking a journey that can stretch to a round-trip distance of several thousand miles is a dangerous and arduous undertaking. It is an effort that tests both the birds' physical and mental capabilities. The physical stress of the trip, lack of adequate food supplies along the way, bad weather, and increased exposure to predators all add to the hazards of the journey.

In recent years long-distant migrants have been facing a growing threat from communication towers and tall buildings. Many species are attracted to the lights of tall buildings and millions are killed each year in collisions with the structures. The Fatal Light Awareness Program, based in Toronto, Ontario, Canada, has more about this problem.