



Flight Types

Birds show a wide range of flight behaviours. Some birds glide through the air looking for prey; others bound and hop in search of seeds to eat. Some expend incredible amounts of energy on flight; others rely on wind patterns to move them. Some spend many days, weeks or months flying without stopping; and yet others don't fly at all, swimming or walking instead. The way birds move depends on their habitat and way of life. Below are the names and descriptions of some of the most common flight styles in birds.

- Unassisted hovering: can hover without being reliant on wind conditions
 - ex: hummingbird



Hummingbird Flight - Karta24 -Remixed - CC BY-SA 4.0

- Dynamic hovering: reliance on wind speed gradients to hover in place
 - ex: terns
- Bounding: short bursts of flapping flight alternating with (short) intervals where the wings are folded against the body
 - ex: woodpeckers
- Flap gliding: short bursts of flapping flight alternating with (short) intervals where the wings are held an extended position
 - ex: pigeons



- Gliding: wings are held in an extended position (no flapping), often resulting in losing altitude
 - ex: gulls





- Thermal soaring: bird gains height by "riding" rising columns of warm air
 - ex: vultures



- Slope soaring: bird gains height from upward-travelling air currents that strike and rise along slopes ex: raptors (eagles, hawks, kites)
- Dynamic soaring: bird uses the gradient in wind speeds that exists over the surface of the ocean to travel long distances, swooping up and gliding in large zig-zags, without using much of their own energy
 - ex: albatrosses and other large pelagic birds



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- Stooping: controlled, rapid, head-first dives
 - ex: kingfishers



- Wing-propelled swimming: bird uses wings to propel and steer itself underwater
 - ex: penguins, auks

•Infrequent flight: (i) completely incapable of flight, (ii) ground-dwelling, (iii) incapable of flight for several weeks (often due to molt), (iv) aversion to flight, and/or (v) previous classification of "poor flight"

• ex: grouse





Wing Shapes

In tetrapods - animals with four limbs, like amphibians, reptiles, mammals and birds - the limbs are made up of a collection of bones that are conserved between different groups but take different forms for different functions.

Starting at the shoulder and moving toward the fingers, the forelimb or upper arm has just one bone called the humerus. The forearm is made up of two bones: the radius, which is the larger of the two, and the ulna, which often forms the elbow. The many bones that make up the wrist are called the carpals, while the hand bones are called the metacarpals and the fingers the phalanges.

Vikram determined the range of motion at the elbow and manus (hand) joints using wings from 61 bird species and found that range of motion in the wing explains diversity in flight style and body mass across species much better than wing shape.

