

Feather Frame: Flight at the Feather Tips

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All birds are smart fliers. They have the instincts to use the atmospheric air to their best benefit. The same factor applies to larger raptors. They need to fly for a longer time to find food and travel long distances. But they have a relatively low basal metabolism as their energy consumption is slow. A powered flight (as in small birds) involves the bird's own muscles, consuming more energy to remain in flight. So these prudent avians have found the way out. They extract energy from the air in which they fly! This theory is called 'soaring'.

While soaring, these raptors are actually exploiting the movements of the wind or air in the atmosphere. To traverse the terrain from a height in search of food, they must remain airborne for longer. For this, they use thermals significantly. Thermals are vortex structures of air and are activated by solar heating of the ground. Raptors fly in circles of small radius to get the lift as the thermals have a zone of rising air in the middle which is surrounded by a zone of rotating air. When the vertical speed of the rising air is

more than the sinking speed of the raptor, it is able to climb or maintain a height without even flapping the whole wings. Broader wings and the slotted tips of the primaries are the characteristics of birds that relish soaring in thermals over the land.

In this picture of a soaring Eurasian Griffon, the primary feathers P7 to P10 are emphasized. Longest among the flight feathers, these primary feathers are relatively stiff and can be controlled and moved like human fingers, even while in flight by the gliding bird. These feather tips provide most of the forward thrust to the bird. The slots between the feathers are also for a purpose. Such space between adjoining flight feathers smooths airflow over the wings which eventually reduces drag. This helps to increase the lift and the gliding ability of vultures.

A very well-known quote by *George Couros* says "You have the world at your fingertips...". But here in the context of the birds, I would mention that the 'Birds have the *Flight at their Feather Tips!*

