

Did you know that if an owl could read, it could read a newspaper from the other end of a football field? Or that a golden eagle can see a rabbit from two miles away? Or that our eyes would need to be the size of grapefruit in order to have the same visual ability of birds of prey? Birds truly have amazing visual abilities!

Birds' eyes sometimes weigh more than their brains. They can see with similar clarity to that of humans, but they can process the information they see much better than humans. All birds can see with binocular and monocular vision. This means that their eyes can work together to see straight ahead, and can also see out of each eye independently.

Monocular vision is the reason that birds have their eyes located in different places on their head. The pigeon has eyes on the side of its head, which enables them to see in all directions except right behind themselves. An American robin cocks its head to one side, appearing to be listening. In reality, it is turning its head to use its monocular vision to spot an earthworm on the ground. The American woodcock's eyes are closer to the top of their head to enable them to see behind.

For bald eagles, this combination of binocular and monocular vision means they can see fish in the water from several hundred feet above, quite an accomplishment since fish are counter-shaded with darker colors on top to make seeing from above harder. Additionally, eagles and other birds of prey have more visual cells – hawks have one million cells compared to humans which have about two-hundred thousand cells. Eagles also have color vision. Combine these skills, and an eagle can fly 1000 feet above an open area and spot prey for an almost three square miles.

The ability to see color is a big advantage to birds. Birds have an area in their retina which contains colored droplets of oil. Kingfishers have more oil than other birds, and scientists believe this helps block the glare from the water. Pigeons have brighter drops of yellow oil, which might help dull the brightness in the sky.

Birds, like humans, also have rods and cones. Rods let in available light, and cones detect color. Nocturnal birds like owls have more rods, which help them detect prey in low light levels. They also have fewer cones, which help discriminate shapes and colors, making it difficult for owls or other nocturnal birds to see finer details. Birds more active during the day have more cones, since the presence of light is needed to see color. In addition to this, birds can also see ultraviolet light—part of the light spectrum that humans can't see. Many birds show different ultraviolet patterns that are not visible to humans, but are believed to assist birds with courtship. Birds whose male and females look the same to us look different from an ultraviolet perspective. This ultraviolet receptor might also help birds with foraging for food, as some waxy berries and fruits reflect ultraviolet light to perhaps advertise their location.

A “bird's eye view” or “an eagle eye” are words that take on new meaning when we realize how complicated bird vision really is. It also makes it more understandable why “sneaking” up on birds to view them closer can be so difficult. That elusive warbler will always continue to be hard to find when our slightest movement is so easily detectable. However, please do not let that dissuade anyone from doing what we can to keep on observing these beautiful creatures!