

High-resolution imaging expands vision research of live birds of prey

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Bird observatories all over the world may benefit from a newly designed high-resolution imaging system used to study the retinal structure of live birds of prey. In a recently published *Investigative Ophthalmology & Visual Science* article, researchers reveal unprecedented three-dimensional information about the retina of four species of raptors — two hawks and two owls — using the non-invasive, powerful imaging tool.

Through a series of experiments conducted at Bascom Palmer Eye Institute at the University of Miami, the research team used the new spectral-domain optical coherence tomography (SD-OCT) system to test its potential for vision research in [birds](#) of prey. The resulting images show detailed retinal anatomy that is not widely known, such as the [retina](#) layers and the structure of the deep and shallow foveae, the tiny pit located in the light-sensitive retina that provides the clearest vision of all. Traumatic injury to one bird's retina was also successfully imaged.

Although OCT has been used to image retinas in animals, the authors report that this the first time [high resolution imaging](#) has been used for living, awake birds, which provides an abundance of images with microscopic detail without harming the birds.

"Previous anatomical studies of raptor foveae required examination of the retina with a microscope, limiting the number of birds that could be studied," said author Robert W. Knighton, PhD, retired research professor at Bascom Palmer Eye Institute.

Lead researchers Marco Ruggeri and Shuliang Jiao and their colleagues suggest that the results of this research point the way for other scientists to study the eye structure and vision of large birds, including those that compare retinal anatomy differences between birds of [prey](#) that hunt during the day and those that hunt at night.

"One can imagine that obtaining data with an SD-OCT scanner could become a routine procedure at the many bird observatories in the world," adds Knighton, who now lives near Hawk Ridge Bird Observatory in Duluth, Minn.

Provided by Association for Research in Vision and Ophthalmology

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