The detection of ensembles of spins under ambient conditions has revolutionized the biological, chemical, and physical sciences through magnetic resonance imaging and nuclear magnetic resonance. Pushing sensing capabilities to the individual-spin level would enable unprecedented applications such as single molecule structural imaging; however, the weak magnetic fields from single spins are undetectable by conventional far field resonance techniques. Over the past decade, there has been a considerable effort to develop nanoscale scanning magnetometers, which are able to measure fewer spins by bringing the sensor in close proximity to its target. The most sensitive of these magnetometers generally require low temperatures for operation, but measuring under ambient conditions (standard temperature and pressure) is critical for many imaging applications, particularly in biological systems. In recent years, nitrogen vacancy centers in diamond have emerged as a promising platform for ambient imaging of few electron and nuclear spins. In this talk I will review recent advances in this field and demonstrate the ability to detect and image ubiquitous dark spins as well as the possibility of imaging ensembles of electron spins with sub-nanometer resolution.