We discuss the presence of a polariton bottleneck in bulk GaN microcavities. Angle resolvedphotoluminescence measurements were performed using low excitation power densities for several negative detunings between the exciton and photon modes. At low temperatures, we observe an enhancement in the emission intensity at angles corresponding to the anticrossing of the lower and upper polariton modes, a clear demonstration of the polariton relaxation bottleneck. This feature becomes less prominent with increasing temperature, eventually disappearing at room temperature. We conclude that polariton-acoustic phonon scattering is the dominant polariton relaxation mechanism in bulk GaN microcavities, as supported by theoretical simulations.