The generalized Bessel function

\[ a_{B,b,p,c}(z) := \sum_{k=0}^{\infty} \frac{(-c)^k}{k! (ak + p + \frac{b+1}{2})} \left( \frac{z}{2} \right)^{2k+p} \]

is studied for a fixed \( a \in \{1, 2, 3, \ldots\} \). Representation formulations for \( a_{B,b,p,c} \) are derived in terms of the parameters \( a, b, \) and \( p \), and the function \( a_{B,b,p,c} \) is shown to be a solution of a differential equation of order \( a + 1 \). Monotonicity properties of \( a_{B,b,p,c} \) are also investigated for \( c \leq 0 \). Finally, the radius of starlikeness of positive order is obtained for the normalized analytic function

\[ f_{a,\nu}(z) := \left( 2^{a\nu-a+1} a^{-\frac{a(a\nu-a+1)}{2}} \Gamma(a\nu + 1) a_{B_{a-1,a\nu-a+1,1}}(a^{a/2}z) \right)^{\frac{1}{a\nu-a+1}} \]

in the unit disk. When \( a = 1 \), the results obtained reduced to earlier known results. (Received August 02, 2017)