Abstract. Hurwitz numbers count branched covers of the Riemann sphere with specified ramification data, or equivalently, transitive permutation factorizations in the symmetric group with specified cycle types. Monotone Hurwitz numbers count a restricted subset of these branched covers related to the expansion of complete symmetric functions in the Jucys-Murphy elements, and have arisen in recent work on the asymptotic expansion of the Harish-Chandra-Itzykson-Zuber integral. In this paper we begin a detailed study of monotone Hurwitz numbers. We prove two results that are reminiscent of those for classical Hurwitz numbers. The first is the monotone join-cut equation, a partial differential equation with initial conditions that characterizes the generating function for monotone Hurwitz numbers in arbitrary genus. The second is our main result, in which we give an explicit formula for monotone Hurwitz numbers in genus zero.