1135-05-2155 **Justin M. Troyka*** (jmtroyka@math.dartmouth.edu) and **Sergi Elizalde**. *Exact and asymptotic enumeration of cyclic permutations according to descent set.*

We use a bijection of Gessel & Reutenauer (1993) to find a simple formula for the number of cyclic permutations with a given descent set, by expressing this number in terms of ordinary descent numbers (*i.e.* those counting all permutations with a given descent set). This formula has several consequences, including the theorem that, for almost all sets $I \subseteq [n-1]$, the fraction of size-n permutations with descent set I which are cycles is asymptotically $1/n$. As a special case, we recover a result of Stanley (2007) for alternating cycles. We also compute the quasisymmetric generating function for permutations avoiding $k-1$ consecutive descents, and in the case of $k=3$ we use this to find a simple formula for the number of cyclic permutations avoiding two consecutive descents. (Received September 25, 2017)