Ralph P Grimaldi* (grimaldi@rose-hulman.edu), Rose-Hulman Institute of Technology, 5500 Wabash Avenue, Terre Haute, IN 47803. Extraordinary Subsets: A Generalization.

For \( n \) a positive integer, a subset \( S \) of \([n]\) is called extraordinary if \( |S| \) equals the smallest element of \( S \). The number of such extraordinary subsets, for a given \( n \), is counted by \( F_n \), the \( n \)th Fibonacci number. For \( 1 \leq k \leq n \), we call a subset \( S \) of \([n]\) \( k \)-extraordinary if \( |S| \) equals the \( k \)th smallest element of \( S \). When \( k = 1 \) such a subset \( S \) is 1-extraordinary (or, simply extraordinary). If we let \( a_{n,k} \) count the number of \( k \)-extraordinary subsets of \([n]\), we examine how \( a_{n,k} \) is related to \( a_{n-1,k} \) and \( a_{n-2,k} \). Further, we find that \( \sum_{k=1}^{n} a_{n,k} = 2^{n-1} \) and that \( \sum_{i=1}^{n} a_{i,k} = a_{n+2,k} - a_{n+1,k-1} \). (Received September 09, 2016)