In this paper we provide three results involving $k$-Fuss-Catalan paths and $(k, r)$-Fuss-Schröder paths. First, we enumerate the number of $k$-Fuss-Catalan paths of type $\lambda$. J. H. Przytycki and A. S. Sikora studied $k$-Fuss-Catalan paths of length $n$, and we extend the study to $k$-Fuss-Catalan paths with type $\lambda$ and $m$ connected components. By taking the sum over $m$ we get the number of $k$-Fuss-Catalan of type $\lambda$. Second, we enumerate the number of $(k, r)$-Fuss-Schröder paths of type $\lambda$. Y. Park and S. Kim studied Schröder paths with type $\lambda$ and $m$ connected components. Generalizing the results to $(k, r)$-Fuss-Schröder paths we give a combinatorial interpretation for the number of small $(k, r)$-Fuss-Schröder paths of type $\lambda$ by using Chung-Feller style. We also give explicit formula for the number of large $(k, r)$-Fuss-Schröder paths of type $\lambda$ with $d$ diagonal steps touching the line $y = kx$, and a description for the number of all large $(k, r)$-Fuss-Schröder paths of type $\lambda$. Finally, we find two sets of sparse noncrossing partitions of $[2(k + 1)n + 1]$ which are in bijection with the set of all small (respectively, large) $(k, r)$-Fuss-Schröder paths of type $\lambda$. (Received September 20, 2016)