A straightforward result in algorithmic randomness is that no Martin-Löf random sequence is a member of a countable $\Pi^0_1$ class (and not even a $\Pi^0_1$ class of Lebesgue measure zero). However, it has been shown by Bienvenu and Porter that there is a computable measure $\mu$ with the property that there is a non-computable sequence that is Martin-Löf random with respect to $\mu$ and is contained in a countable $\Pi^0_0$ class; in fact, this particular sequence has Cantor-Bendixson rank 1. This raises a question: For each computable ordinal $\alpha$, is there a sequence that is Martin-Löf random with respect to some computable measure and has Cantor-Bendixson rank $\alpha$? In this talk, I will show that not only is there an affirmative answer to this question, but also that such a sequence can be found in every $\Delta^0_2$ degree that contains a Martin-Löf random sequence (with respect to the Lebesgue measure). This is joint work with Rupert Hözl. (Received March 21, 2017)