In a previous paper (Gorur-Shandilya et al 2017), we showed that \textit{Drosophila} olfactory receptor neurons (ORNs) expressing the co-receptor Orco scale their gain inversely with mean odor intensity, according to the Weber-Fechner law of psychophysics. Here we investigate the implications of this front-end mechanism for odor coding capacity in natural environments, where the intensity and timescales of odor signals can span several orders of magnitude, and odors can mix together. We find that ORN adaptation promotes the reconstruction of odor identity from dynamic odor signals, even in the presence of confounding background odors and rapid intensity fluctuations. These enhancements are further aided by known downstream transformations in the antennal lobe and mushroom body. Our results, which are applicable to various odor classification and reconstruction schemes, stem from the fact that the strength of this adaptation is intrinsic neither to the identity nor intensity of the odor. Rather, it is mediated directly by olfactory ion channel activity, which feeds back onto receptor sensitivity in accordance with Weber-Fechner scaling. This scaling law, shared across all Orco-expressing ORNs, may be one of the features of ORN adaptation that helps preserve combinatorial codes in naturalistic odor landscapes.