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THE ECOLOGY OF PRIMATE COLOR VISION

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Because collecting and analysing sense data is costly, much as a statistician can advise on how to take measurements in experimental design, natural selection favours sensory mechanisms that efficiently serve behavioural needs. It follows that given knowledge of natural stimuli – such as reflectance spectra – and the physiological mechanism – such as receptor spectral sensitivities - one might understand the behavioural abilities that are under selection. Primate colour vision presents two main questions. First, why do Catarrhines have three types of cone photoreceptor, and what accounts for their particular spectral tuning? Second, what accounts for the polymorphic colour vision amongst Platyrrhines and lemurs? Work on genetics, behaviour, and measurement of natural stimuli have enriched our understanding of how colour vision has evolved to serve natural behaviours. I will explain how models of visual coding can inform this work, and review various hypotheses about the evolution and function of colour vision.

Keywords: colour vision, polymorphism, modeling.