

Primate camouflage in the eyes of felids, raptors, and conspecifics

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Questions

- Has primate pelage color evolved to match forest backgrounds?
- Primates are viewed by conspecifics and predators with different visual systems. Are there differences in primate background matching across visual systems?
- Primate body regions could be under varying selective pressures due to different needs, e.g. predator avoidance & communication. Do primate body parts vary in distinctiveness against the background?

Primates are seen by multiple receivers with different visual systems

Tetrachromatic raptor predators

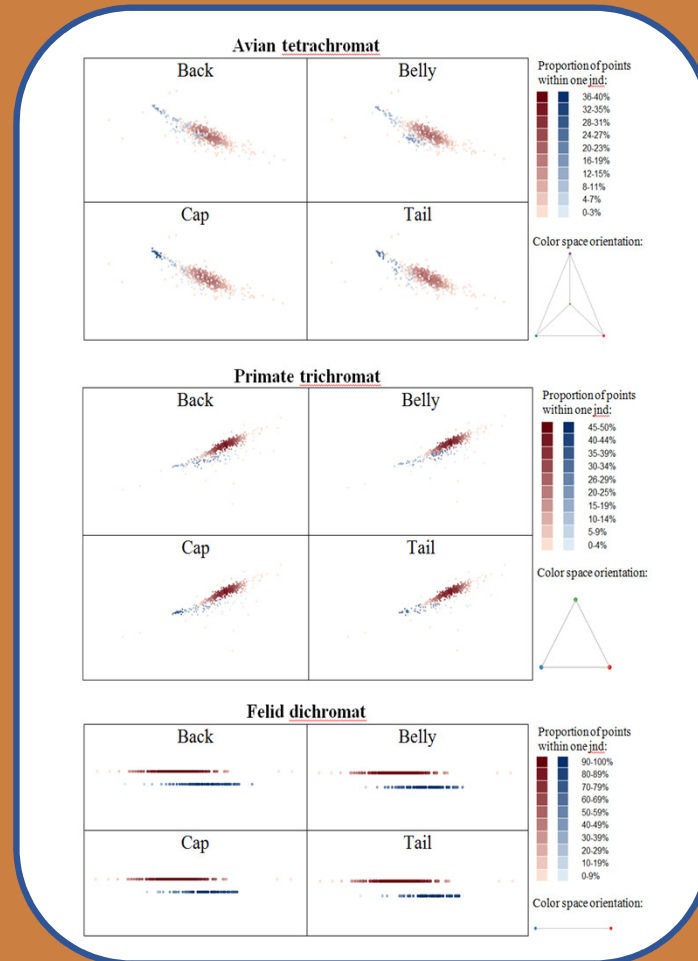
(Many) trichromatic conspecifics



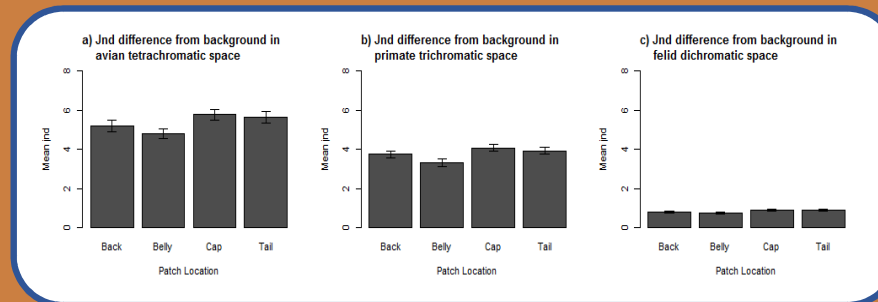
Dichromatic felid predators

Methods

- Spectral reflectance data from 79 primate spp & 399 plant spp
- Colors plotted in multi-dimensional color spaces
- Phylogenetically-controlled generalized linear mixed models used to determine visual system & body part effects



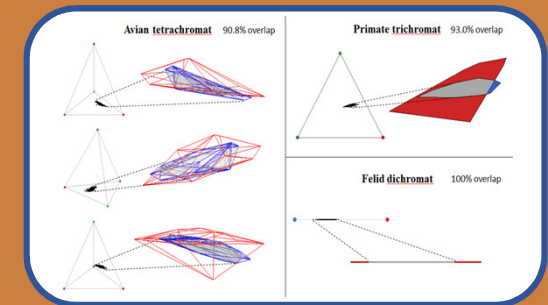
Chromaticity diagrams depicting primate pelage colors (blue) and background foliage colors (red). Point colors are assigned based on point densities in that region of the color space, with darker colored points having a larger proportion of other points (of the same category) within a radius of one jnd than lighter colored points (note that color ramps are at different scales across visual systems).



Mean jnd distance from the mean background color for each body part, separated by visual system.

Results & Conclusions

- Primate colors occupy regions of visual space that overlap greatly with those occupied by background foliage, leaving vast areas of visual space unused – suggests selection for background matching



- Primate colors contrast most with background colors to tetrachromatic raptors & least to dichromatic felids – indicates that primates colors may have been selected to exploit differences between visual systems
- Primate caps & tails, which are often involved in conspecific communication, contrast most with the background, and bellies least – evidence for signal partitioning

Acknowledgements

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Questions or comments?

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