Are equid brains social? Exploring the evolution of equid social structure and social intelligence

Invited Presentation

Susanne Shultz, Institute of Cognitive and Evolutionary Anthropology
University of Oxford

The living equids display a variety of different forms of social organisation; plains (*Equus quagga*) and mountain zebra (*Equus zebra*) associate in small, closed harems, whereas the asses and Grevy's zebra (*Equus grevyi*) are found in looser, more ephemeral associations. Feral domestic horses appear to be somewhat intermediate: although stallions generally maintain harems, there is some movement of individuals between groups. This talk will use several statistical approached to explore evolutionary explanations for these differences. Firstly, we will explore the relationship between brain architecture and social organisation both among the equids and across all Perissodactyls. Equids have larger relative neocortices than other Perissodactyls; within the equids, species typically found in more stable groups have larger neocortices than equids in more unstable ephemeral groups. The strong relationship between group stability and brain size and architecture mirrors that found in other mammals, including primates. Thus, living in stable social groups consistently appears to impose cognitive demands across species. In order to understand the historical trajectory resulting in the relatively large, social brains found in some species, we then reconstruct the evolutionary pathway of social living in the equids. Finally, we discuss how we can use network theory to measure social structure and how these differences may impose different cognitive demands on individuals.

Key words: social brain hypothesis, Bayesian modelling, social networks, brain size, social evolution

Corresponding author:
Susanne Shultz
Tel:
Fax:
E-mail: susanne.shultz@anthro.ox.ac.uk