- Stand-alone summary/overview
- 200-300 words
- Components:
  - 1. Background, known
  - 2. Gap, unknown, problem
  - 3. Research aim / hypothesis
  - 4. Quick summary of approach / methods
  - 5. Key results, important numbers
  - 6. Conclusion / answer the question
  - 7. Broader implication/speculation/recommendation

Abstract

Abstract

1. Many species show territoriality, in which territory owners have exclusive or priority use of a region. In humans, tolerance of others within our space also depends greatly on our social relationships with them. This has been hypothesized as one potential driver of the evolution of long-term, inter-group relationships, through enabling shared access of resources and easing disputes over space.
2. However, extremely little is known about the importance of social relationships between neighbouring groups in non-humans for how space is used and shared.
3. Using 16 years of data on the simultaneous movement and interaction patterns of 17 mountain gorilla groups, we investigated how the occurrence of aggressive and affiliative behaviour during inter-group encounters was influenced by both their social and spatial context.
4. We found evidence of territorial defence, with rates of aggression increasing towards the centre of home ranges. Groups which had previously split from each other showed higher levels of affiliation during encounters with each other and experienced lower levels of aggression when within the other's peripheral home range. However, encounters within core areas of the home range consistently elicited higher aggression, regardless of the groups' history. Our findings indicate that not only are the social relationships between groups retained after they split from one another but also that these relationships enable groups to access certain areas with a reduced risk of aggression.
5. This suggests that reduced aggression when accessing areas within neighbours' home ranges may be an advantage for the maintenance of inter-group relationships and a potential driver in the evolution of long-term, post-dispersal relationships and complex multi-level societies.

Alison M. Ashbury, 2022-05-30

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updates

Experimental evidence of memory-based foraging decisions in a large wild mammal

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Many animals restrict their movements to a characteristic home range. This constrained pattern of space use is thought to result from the foraging benefits of memorizing the locations and quality of heterogeneously distributed resources. However, due to the confounding effects of sensory perception, the role of memory in home-range movement behavior lacks definitive evidence in the wild. Here, we analyze the foraging decisions of a large mammal during a field resource manipulation experiment designed to disentangle the effects of memory and perception. We parametrize a mechanistic model of spatial transitions using experimental data to quantify the cognitive processes underlying animal foraging behavior and to predict how individuals respond to resource heterogeneity in space and time. We demonstrate that roe deer (*Capreolus capreolus*) rely on memory, not perception, to track the spatiotemporal dynamics of resources within their home range. Roe deer foraging decisions were primarily based on recent experience (half-lives of 0.9 and 5.6 d for attribute and spatial memory, respectively), enabling them to adapt to sudden changes in resource availability. The proposed memory-based model was able to both quantify the cognitive processes underlying roe deer behavior and accurately predict how they shifted resource use during the experiment. Our study highlights the fact that animal foraging decisions are based on incomplete information on the locations of available resources, a factor that is critical to developing accurate predictions of animal spatial behavior but is typically not accounted for in analyses of animal movement in the wild.

Alison M. Ashbury, 2022-05-30