VISITING SCHOLAR PROGRAM

The PHI BETA KAPPA Society

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Public Lecture Offerings

Selective forces shaping the evolution of intelligence

Theoretically, despite the high cost of neural tissue, intelligence should evolve to help animals solve specific types of problems posed by their environment. However, it remains unclear which selective forces facilitate the evolution of larger brains and enhanced cognition. Here I consider the hypotheses proposed to explain the evolution of large brains and sophisticated cognition. The Social Complexity hypothesis, in particular, has been strongly supported by work on the socio-cognitive abilities of primates and other animals. Like many primates, spotted hyenas live in bonded social groups as a means of solving ecological problems. Here I review the remarkable convergence in social complexity between old-world primates and spotted hyenas, and a corresponding convergence in their social intelligence. However, it remains unclear whether social complexity can also explain the evolution of domain-general intelligence.

Anthropogenic influences on the behavior & physiology of large African carnivores

Due to habitat fragmentation and loss in recent decades, many species of mammalian carnivores have become largely confined to protected areas. Disturbingly, however, some large carnivore species are disappearing even from places where they are putatively protected. Where they do persist, when they prey upon livestock, humans often kill them to retaliate. In addition to such lethal effects, humans can potentially also have non-lethal effects on carnivores by modifying their behavior and physiology, and these modifications may predict enhanced mortality or other demographic

change. I review the effects of human activity on the behavior, stress physiology, and demography of free-living hyenas in Kenya. Of all the large carnivores inhabiting Africa, spotted hyenas exhibit the greatest behavioral and ecological plasticity. Spotted hyenas therefore offer us a conservative indicator of ecosystem health before African habitats become too severely degraded to support other large carnivores.

A Hyena's Tale

Although most people think of hyenas as unattractive scavengers, they are in fact among the most fascinating animals on earth. Spotted hyenas are superb hunters, but use endurance rather than stealth to run down antelope. They live in large, complex societies structured exactly like those of baboons, but with one interesting twist: contrary to the situation in baboons and most other mammals including humans, female spotted hyenas are socially dominant over males, and females are also dramatically 'masculinized' in their appearance. In fact, spotted hyenas appear to break many of the 'rules' governing mammalian biology; these animals thus offer us a unique opportunity to determine what the 'rules' really are.

Classroom Discussion Topics

1. Q & A on any of the above topics: what more would you like to know?
2. Studying large African carnivores: how do we study these animals, and what can they teach us?
3. Evolutionary biology: why do so many Americans fail to acknowledge that living creatures evolve?
4. The hyena's reputation: why is it so bad?
5. Trust in science: what can we do to regain the public's confidence in science?