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Food Sharing and Nonhuman Reciprocal Altruism

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Definition

Food sharing is a form of altruism, during which an animal gives up food, which it could otherwise eat itself, to another individual. It includes active donation of food but also tolerated theft.

Introduction

Feeding on food that it has foraged is of great importance to ensure the fitness of an animal. Giving up this food for a conspecific is thus one of the most prominent examples of altruism.

Although it may bear immediate costs for the donor, sharing food may however be beneficial on the long term. There are various examples of food sharing in the animal kingdom, most of which can be explained by mechanisms such as kin selection or reciprocity (Stevens and Gilby 2004).

Mechanisms and Examples of Food Sharing

Food sharing has been extensively studied in various species. In social carnivores, for example, active food sharing is rare, but passive sharing i.e., allowing conspecifics to feed from the same carcass at the same time, is common (reviewed in Feistner and McGrew 1989). Some carnivores such as African wild dogs (*Lycaon pictus*) and wolves (*Canis lupus*) regurgitate food for pups. This type of active food sharing is mostly driven by kin selection, as members of the family predominantly show this behavior, such as older siblings for the younger ones (Malcolm and Marten 1982). Through kin selection, an individual gains fitness by helping a conspecific sharing proportions of the same genes and thus promote the representation of these genes in the gene pool of the next generation (Hamilton 1964).

However, African wild dogs unlike other carnivores also regurgitate food for adult pack members, both related and unrelated. Thus, where kin selection can not explain why an individual may give up food for a conspecific, Stevens and Gilby (2004) suggest other mechanism to maintain such altruistic behavior in a population. Young ravens

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(*Corvus corax*) for example may inform other individuals about the location of food through recruitment calls (Heinrich 1988). In groups, they are able to overwhelm otherwise dominant adult territory holders and thereby gain access to carcasses they could not get on their own. Thus, by sharing food, they gain immediate benefits through increased foraging success. Other immediate benefits occur when food is provisioned to mates (nuptial feeding), as in many arthropods (Gwynne 2008), or by reducing aggressive behavior of an opponent, such as in primates (Stevens 2004).

In other cases, there are no obvious immediate benefits for the donor. One of the most prominent examples of nonprimate food sharing is the one by common vampire bats (*Desmodus rotundus*; Wilkinson 1988). Vampire bats feed on blood of large vertebrates and heavily depend on successful foraging trips, as an otherwise starving individual would die within a few days. As most other bats, vampires live in large colonies of both related and unrelated individuals. Successfully foraging vampires have been observed to regurgitate blood for unsuccessful conspecifics and thus save them from starving, a behavior which is reciprocated, mostly in dyads (direct reciprocity). While food sharing in this case does not have large negative consequences for the donor, it is of tremendous value for the receiver, and thus there is a net benefit for food sharing dyads. Besides food-for-food, vampire bats also seem to share food for grooming (Wilkinson 1988). Thus, as other altruistic services, food may be traded against other commodities, which is frequently the case in primates (Jaeggi and Gurven 2013), where food is exchanged for grooming, support during conflicts, and access to mates. Furthermore, sharing food with conspecifics can enhance the overall status of an individual within a group or lead to overall benefits for the group such as increasing group size and thus survival of group members (Stevens and Gilby 2004).

While food sharing in nonhuman animals is frequently enforced by harassment, much human sharing is voluntary and proactive (Jaeggi and Gurven 2013). It is widely observed across populations and attributed to various functions: By sharing high quality food, men could enhance their status as good hunter in a group, and thus increase reproductive success. However, women also frequently share food, for example, as part of a sexual division of labor which increases foraging efficiency and thus family provisioning. Food sharing among nonrelatives overall increases social status in humans and recruit support for times in need. Furthermore, investing in social capital through contributing to public goods may buffer the risk of unpredictable foraging success in the future. As in other species, reciprocity may play an important role in human food sharing among nonkin, as giving and receiving food seems to be highly correlated across human populations.

Conclusion

Food sharing is one of the most common forms of altruism. Although it is costly in the first place, it may as well have short- and long-term benefits for the donor. As during other altruistic acts, food may be exchanged for other commodities, such as social support or mating opportunities, and thus be part of a complex social behavior network.

Cross-References

- ▶ Adaptation and Natural Selection
- ▶ Adaptation
- ▶ Adaptations for Reciprocal Altruism
- ▶ Altruism Among Non-Kin
- ▶ Altruism and Watching Eyes
- ▶ Altruism in Kin Selection; Puzzle of Altruism, The
- ▶ Altruism Norms
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- ▶ Cooperation Among Non-Human Primates
- ▶ Cooperation Among Non-Humans
- ▶ Cooperation Among Non-Primate Mammals

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- Reciprocal Altruism and Group Living
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- Robert Axelrod's (1984), The Evolution of Cooperation
- Robert Trivers
- Strategies for Successful Cooperation
- Theory of Reciprocal Altruism
- Tit-for-tat Cooperation
- When It Matters Most, Altruism Predicted by Genetic Relatedness

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