

P

Polyandry



A. Szala and Todd K. Shackelford
Department of Psychology, Oakland University,
Rochester, MI, USA

Synonyms

[Bigamy](#); [Plural marriage](#); [Polygamous marriage](#);
[Polygamy](#)

Definition

Polyandry is one of the forms of polygamy; in sexually reproducing diploid animals, it is the mating system of females having two or more mates, successively or simultaneously.

Introduction

Historically, according to Bateman's Principle, it has been argued that polyandry provides no fitness benefits to females (Bateman 1948). However, polyandry occurs frequently in nature and later analyses showed that polyandry may provide benefits for females not only in animals (e.g., Arnqvist and Nilsson 2000; Simmons 2005) but also in humans, in particular. Despite some costs, such as increased predation risk, exposure to diseases, energy and time costs, and physical harm,

having multiple mates may be beneficial, because it may secure additional male-provisioned resources to the female and her offspring. In addition, paternal uncertainty may decrease a male's willingness to harm offspring produced by the female and increase the male's investment and paternal care. A notable aspect of polyandry is sperm competition between males, which may select for cryptic female choice to thereby secure genetic diversity or higher-quality genes for offspring.

Polyandry in Nonhuman Animals

In animals, polyandry refers to a female having two or more mates in a breeding season. Polyandry is common in nature and is more prevalent in animals for which having a low-quality male mate is highly costly (Colegrave et al. 2002). It can be observed in various species, such as bees, crickets, honeybees, frogs, fish, birds, tortoises, whales, polecats and other ferrets, house mice, and marmosets. Polyandry is a feature of social organization among Callitrichidae, a family of New World monkeys. Polyandry in primates is often correlated with reduced or reversed sexual dimorphism, such that females are larger than males. In wattled jacanas, females copulate with many males, which leads to sperm competition, resulting in the most viable sperm fertilizing the eggs and increasing genetic diversity of the offspring (Emlen et al. 1998). In redback spiders,

females store the sperm of several mates and can actively affect the paternity of offspring (Snow and Andrade 2005). In addition, in bank voles, monandrous females' offspring have lower survival rates than polyandrous females' offspring, due in part to the decreased risk of infanticide by males (Klemme and Ylönen 2010). There are, however, species in which polyandry occurs but for which there are not clear benefits to the female. In marine turtles, for example, polyandry appears not to generate benefits for the female, but instead appears to be an incidental consequence of intense male sexual aggression (Lee and Hays 2004).

Polyandry in Humans

In humans, polyandry has been defined in several ways, including having more than one husband or partner at a time, while the husbands or partners are not married or partnered to any other women. It has been argued that the specific shape of the human penis may serve as an adaptation to remove rival male sperm from the reproductive tract of a polyandrous female (Gordon et al. 2003). One of the most common forms of human polyandry is fraternal (adelphic) polyandry, in which a woman marries two or more brothers. Polyandry is much less frequent than polygyny (one male mated to more than one woman) but has been observed in many societies, including in Africa, Asia, Europe, Oceania, and both Americas. Societies with polyandry are usually small, e.g., Indian societies having from several hundred (Toda people) to approximately 80,000 (Khasi people) members. It has been estimated that there are only several hundred modern societies in which polyandry is commonly practiced, but in none of these places is it officially legal. Many sects of most of the major religions (e.g., Christianity, Judaism, Islam) perceive polyandry as unacceptable. In many small societies around the world, the native culture and traditions were transformed or eradicated and, therefore, it is difficult to estimate the prevalence of polyandry in the past before these transformations or eradications occurred.

Cross-References

- ▶ [Breeding Season](#)
- ▶ [Cryptic Mate Choice](#)
- ▶ [Diploid](#)
- ▶ [Fitness](#)
- ▶ [Genetic Variation](#)
- ▶ [Polygamy](#)
- ▶ [Polygyny](#)
- ▶ [Primates](#)
- ▶ [Sexual Dimorphism](#)
- ▶ [Sperm Competition](#)

References

- Amqvist, G., & Nilsson, T. (2000). The evolution of polyandry: Multiple mating and female fitness in insects. *Animal Behavior*, *60*(2), 145–164.
- Bateman, A. J. (1948). Intra-sexual selection in *Drosophila*. *Heredity*, *2*, 349–368.
- Colegrave, N., Kotiaho, J. S., & Tomkins, J. L. (2002). Mate choice or polyandry: Reconciling genetic compatibility and good genes sexual selection. *Evolutionary Ecology Research*, *4*(6), 911–917.
- Emlen, S. T., Wrege, P. H., & Webster, M. S. (1998). Cuckoldry as a cost of polyandry in the sex-role-reversed wattled jacana, *Jacana jacana*. *Proceedings of the Royal Society B: Biological Sciences*, *265*(1413), 2359–2364.
- Gordon, G. G., Jr., Burch, R. L., Zappieri, M. L., Parvez, R. A., Stockwell, M. L., & Davis, J. A. (2003). The human penis as a semen displacement device. *Evolution and Human Behavior*, *24*, 277–289.
- Klemme, I., & Ylönen, H. (2010). Polyandry enhances offspring survival in an infanticidal species. *Biology Letters*, *6*(1), 24–26.
- Lee, P. L., & Hays, G. C. (2004). Polyandry in a marine turtle: Females make the best of a bad job. *Proceedings of the National Academy of Sciences of the United States of America*, *101*(17), 6530–6535.
- Simmons, L. W. (2005). The evolution of polyandry: Sperm competition, sperm selection, and offspring viability. *Annual Review of Ecology, Evolution, and Systematics*, *36*, 125–146.
- Snow, L. S., & Andrade, M. C. (2005). Multiple sperm storage organs facilitate female control of paternity. *Proceedings of the Royal Society B: Biological Sciences*, *272*(1568), 1139–1144.