

## INFANTICIDE

Infanticide refers to the killing of dependent young individuals by members of the same species. Although it appears maladaptive at first glance, infanticide is often an adaptive reproductive strategy shaped by natural and sexual selection. It is most commonly observed in mammals, particularly in species with complex social structures. Infanticide can be performed by males, females, or even unrelated individuals, depending on ecological and social conditions.

The adaptive significance of infanticide was initially controversial, as early researchers viewed it as pathological behavior. However, later studies, especially in primates and carnivores, demonstrated that infanticide could enhance reproductive success under certain conditions. The concept gained strong support with the development of the **sexual selection hypothesis of infanticide**, which explains male-driven infanticide as a reproductive strategy.

### Types of Infanticide

Infanticide can be broadly categorized into several types. **Sexual selection-driven infanticide** is the most studied form, where males kill offspring that are not genetically related to them. **Resource competition infanticide** occurs when individuals eliminate young to reduce competition for food or space. **Parental infanticide** may occur under stressful conditions or when offspring are unlikely to survive. In rare cases, **pathological infanticide** occurs due to abnormal environmental or physiological conditions.

### Sexual Selection Hypothesis

The sexual selection hypothesis explains infanticide as a strategy used by males to increase reproductive success. When a new male takes over a group, he may kill existing offspring sired by previous males. This action brings females back into estrus more quickly, allowing the new male to mate and pass on his genes. For this strategy to be adaptive, three conditions must be met: the male must not be the father of the offspring, the death of the offspring must shorten the female's interbirth interval, and the male must have a high probability of mating with the female afterward.

### Mechanisms and Behavioral Patterns

Infanticide typically occurs during social upheaval, such as male takeovers or changes in dominance hierarchies. The act may involve direct killing of infants or neglect induced by social stress. In some cases, males selectively target unweaned offspring, as their removal has the greatest impact on female reproductive cycles. The behavior is often accompanied by aggression toward females and other group members.

### Examples of Infanticide

## **Lions**

In Lion populations, incoming males often kill cubs sired by previous males after taking over a pride. This causes females to resume estrus within a short period, enabling the new males to reproduce.

## **Primates (Langurs)**

In Hanuman langurs, dominant males kill infants when they replace previous leaders. This behavior is well-documented and strongly supports the sexual selection hypothesis.

## **Rodents**

In rodents, infanticide may occur due to high population density and competition for resources. Both males and females may participate in such behavior.

## **Female Counter-Strategies**

Females have evolved several strategies to counter infanticide. One important strategy is **paternity confusion**, where females mate with multiple males to reduce the likelihood of infanticide. Other strategies include forming alliances with protective males, aggressive defense of offspring, and concealing ovulation to prevent males from identifying fertile periods.

## **Costs and Risks of Infanticide**

Infanticide involves risks, including injury during aggressive encounters and potential retaliation from females or other group members. It may also destabilize social groups. However, the reproductive benefits often outweigh these risks in species where infanticide is common.

## **Evolutionary Significance**

Infanticide plays a significant role in shaping social organization, mating systems, and reproductive strategies. It influences female reproductive behavior, male competition, and population dynamics. By altering reproductive timing and success, infanticide contributes to evolutionary fitness.