

BIO 45 – Lect., 3-08 -- Lions – New and Emerging Perspectives

Lions are no longer seen as the "king of the beasts" or an example of lazy males being taken care of by a harem of females. Most cubs die of starvation or predation (80%) and males may get only one brief chance at reproduction before being driven away from the pride they defend by another group of males. Infanticide by new males may account for 25% of cub mortality.

I. Why do females live in groups?

- Cooperative hunting - probably not
- Communal care of young & defense against males - decreased frequency of infanticide- yes
- Defense of home range - yes

Lion group size was thought to be optimal for cooperative hunting. Recent analyses show that groups tend to be bigger than predicted by optimal energy intake models. Optimal size = 1 or of 5-6, but most are 2-4 during low food conditions. Packer & Pusey argue that more females mean better cub survival due to (1) defense against nomadic males and (2) larger female groups having less male turnover and thus less infanticide. Group defense of feeding territory is also key.

II. Why do females cooperate in rearing of young? Why have synchronized reproduction?

- Related females; communal suckling of young due to inclusive fitness or reciprocal altruism?
- Synchronized reproductive cycles because cub survival better when other cubs around

Females are close relatives and unrelated to the coalition of males associating with their pride. Synchrony may be due to male take-over and infanticide or to benefits of better cub survival or both.

III. Why do females "tolerate" infanticide?

Females do try to defend cubs. Males are 50% bigger than females and females must leave cubs behind while hunting (no food sharing -- as in wild dogs). Females encourage larger groups of males to challenge current pride males. Large coalitions hold prides longer - allowing more cubs to mature.

IV. Why does male and female behavior differ in pride?

For example, cub mortality is largely due to starvation and predation (often by lions). When food is scarce females do not share food with cubs but males do share food with cubs. Why?

For many long lived animals, some answers only appear when you consider what influences lifetime reproductive success. Females have about an 11 year reproductive period while for males it may only be 2-3 years or less. Each cub is a greater part of total male reproduction than female reproduction. In poor food years, females appear to trade-off current cubs for their own survival and better conditions in another year. Males may not have that option.

Female Life History

BIRTH --- 3-4 YRS -----> ----- **ADULT LIFE IN PRIDE** ----- -- X
11+ yrs
← Offspring Production →

Male Life History

BIRTH ---2-3 YRS---> LEAVE PRIDE ----- NOMADIC -----> **WITH PRIDE** ----X
2-4 yrs
← Offspring →

V. Why do males form coalitions and share matings? Why join up with non-relatives?

- shared matings may be due to female reproductive biology and synchrony?
- DNA fingerprinting reveals that although most males mate, one or two sire most of the offspring
- short tenure for smaller male groups → advantage to larger coalitions (larger groups = relatives)

Coalition males originally assumed to be brothers and to share copulations. Recent data shows that male fertilization success varies considerably. Since male group size is the key to success, joining non-relatives, even if competing with them for fertilizations, may improve reproductive success. Females may attempt to attract larger groups of males to their pride -- despite the possible costs of infanticide if a new group of males takes over. More information - www.lionresearch.org/main.html