

EASTERN UNIVERSITY SRI LANKA
SECOND EXAMINATION IN SCIENCE (2015/2016)
ANIMAL BEHAVIOUR AND EVOLUTION
ZL-252 (OCT/NOV 2018)

CASE STUDY (Final Practical examination)

Time: 45 minutes

Index No:

3.
A. Mating behaviour in red deer

The red deer (*Cervus elaphus*) is one of the largest deer species. The red deer inhabits most of Europe, the Caucasus Mountains region, Asia Minor, Iran, parts of western Asia, and central Asia. It also inhabits the Atlas Mountains region between Morocco and Tunisia in northwestern Africa, being the only species of deer to inhabit Africa. Red deer have been introduced to other areas, including Australia, New Zealand, Peru, Uruguay, Chile and Argentina. Red deer in Europe generally spend their winters at lower altitudes in more wooded terrain. During the summer, they migrate to higher elevations where food supplies are greater and better for the calving season. Male European red deer have a distinctive "roar"-like-sound (not to be confused with actual roars made by lions, panthers and the like) during the rut. The male deer roars to keep his harem of females together. The females are initially attracted to those males that both roar most often and have the loudest roar call. Males also use the roar call when competing with other males for females during the rut, and along with other forms of posturing and antler fights, is a method used by the males to establish dominance. Roaring is most common during the early dawn and late evening, which is also when the crepuscular deer are most active in general.



Figure 1: Female and Male red deer

ANSWER THE ALL QUESTIONS

1. Identify TWO differences between male and female red deer

.....

2. What term is used to describe the differences that occur in structure and appearance between male and female animals of the same species?

.....

3. Identify ONE other animal species in which differences between male and female occur.

.....

4. State 3 advantages to animals by the term write in question no 2?

.....

5. In the breeding season (known as the rut), red deer stags roar frequently when they are trying to hold onto a number (harem) of females in order to mate with them when the females are ready.

i) Give ONE reason why it is important for stags to feed well during the summer before the breeding season begins?

.....

ii) Roaring is believed to be an 'honest' signal of male quality. What does the term 'honest' mean in this context?

.....

iii) Roaring is often the first behaviour observed when two stags compete. Two other behaviours may also occur before the contest is decided. Identify the TWO behaviours and for one of them briefly outline the sequence of events.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

(3)

B. Vigilance of Thomson's gazelles

Thomson's gazelles, *Gazella thomsonii*, are grazing animals found on the savanna grasslands of East Africa. They live in groups of 5 – 60 animals. When grazing, they frequently look up, or scan, to see if a predator, such as a cheetah, *Acinonyx jubatus*, is near. For an individual gazelle, there is a trade-off between feeding and being vigilant but in a group the many pairs of eyes mean the gazelles will detect a predator approaching sooner: so the escape success of the gazelles in a group is increased, the success of an attack by a predator is decreased.

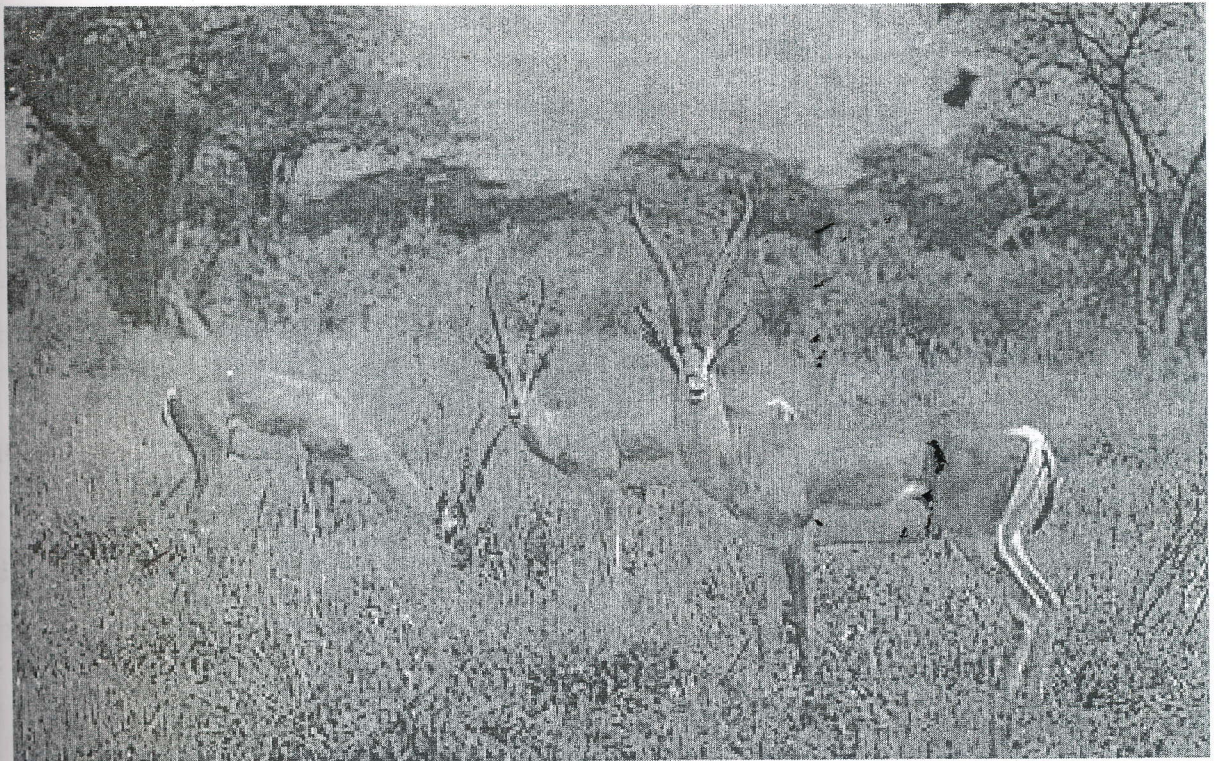


Figure 1: Thomson's gazelles, one vigilant and feeding.

A study* of Thomson's gazelles in the Serengeti National Park in Tanzania compared the reactions of two gazelles to a cheetah that has just begun to stalk them. Each pair were of the same sex and were within 5 m of each other at the start of the hunt. The scientist compared the % of time each gazelle spent scanning (being vigilant) and whether it was chased by a cheetah or whether it was ignored. Some of her data are in Table 1.

Fitzgibbon, C. D. 1989. A cost to individuals with reduced vigilance in groups of Thomson's gazelles hunted by cheetahs. *Animal Behaviour*, 37: 508 – 510.

Table 1 Percentage of time each one of a pair of gazelles spent in vigilance and whether it was chased or ignored.

Gazelle Chased		Gazelle ignored	
Vigilance %	Sex	Vigilance %	Sex
8	M	17.5	M
31.4	M	63	M
40	M	70.2	M
15.7	M	38.8	M
40	M	45	M
35.3	M	39.1	M
31.7	M	65.2	M
68.5	M	72.5	M
81	M	96.3	M
49.7	M	90.1	M
62	M	88.3	M
72.6	M	89.9	M
10	F	65	F
78.7	F	84.2	F
52	F	20	F
23.9	F	20.5	F

1. Give a definition of vigilance.

.....

(1)

2. This was an observational study of animals in the field. What is an observational study?

.....

(1)

3. Why did the researcher always compare two animals of the same sex?

.....

4. Comment on the data in the table.

.....

5. For any study of animals living in a group, outline what the findings of the study suggest about some of the advantages of living in a group for prey animals.