



FACULTY	AGRICULTURE, ENGINEERING & NATURAL SCIENCES		
DEPARTMENT	ENVIRONMENTAL SCIENCE		
SUBJECT	BEHAVIOURAL ECOLOGY		
SUBJECT CODE	EBL3812		
DATE	FEBRUARY 2022		
DURATION	3 HRS	MARKS	120

PROMOTIONAL EXAMINATION

Examiner: Dr. L. A. Hart (University of Namibia) & Dr. D. Kavishe (University of Namibia)

Moderator: Prof. C. T. Downs (University of KwaZulu-Natal)

This examination paper consists of 5 pages including the front page

Instructions

- Carefully read all the instructions.
- There are two sections in this paper.
- Answer ALL questions from Section A and TWO questions from Section B.
- Section A = 60 marks
- Section B = 60 marks

UNIVERSITY OF NAMIBIA EXAMINATIONS

SECTION A: COMPULSORY QUESTIONS (Total 60 marks)

Answer ALL questions in this section

Question 1 (12 marks)

In some species of birds, individuals that do not breed help breeding females to raise their young. Figure 1, shows the percentage of non-breeding birds that helped with looking after the young or nestling.

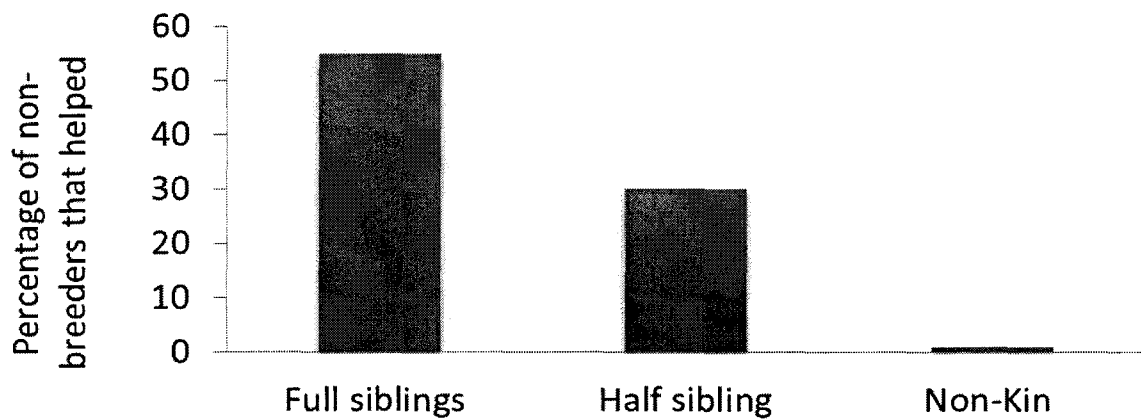


Figure 1. Percentage (%) of non-breeding birds that helped with young.

(a) On the basis of the results presented in Figure 1:

- (i) Describe trend (s) revealed in Figure 1 [3].
- (ii) State the adaptive value of the helping behaviour for non-breeding birds [5].

(b) Differentiate between:

- (i) Parental investment [2]
- (ii) Parental care [2]

Question 2 (8 marks)

Using Darwin's theory of evolution by natural selection, describe how different behaviors may have evolved in animals [8]

Question 3 (8 marks)



A female tigress gave birth to a stillborn litter (no cubs survived). The zookeepers introduced piglets the next morning to the depressed, postpartum tigress (see above image).

- a.) Using your knowledge of both internal and external mechanisms / stimuli, explain why this predatory species did not kill and eat these piglets. [4]
- b.) Discuss the role of Nature versus Nurture in behavioural development [4]

Question 4 (8 marks)

The 2022 Behavioral Ecology students carried out a study in which they were presented with 15 pictures, one at a time, each being presented for 30 seconds. After the 15th picture was presented, students were asked to write down the pictures they could remember from the 1st to the 15th picture. Figure 2 below presents the class's results.

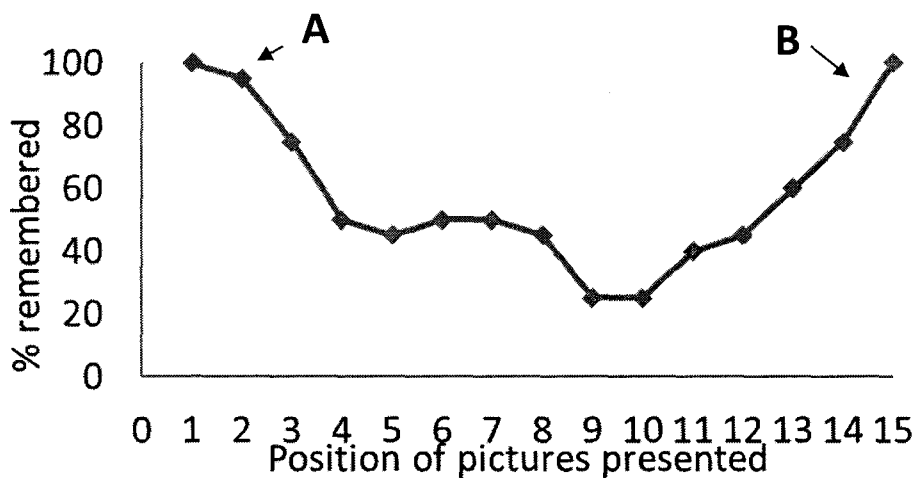


Figure 2. The percentage of the class that remembered the pictures which were presented, from the 1st to the 15th image.

(a) What trends are revealed in Figure 2? (4)

(b) State and describe terms that are used to refer to A and B? (4)

Question 5 (12 marks)

You observe a bird, e.g. a starling (*Sturnus vulgaris*) searching in the grass for food. The starling walks along, pausing every now and then to probe into the ground. Sometimes it succeeds in finding a prey item, such as a beetle larva, and eventually, when it has collected several prey items it flies back to the nest to feed its hungry brood.

Explain the behaviour of the starling collecting food and flying to feed young in the nest using Tinbergen's 4 questions (Please do not list the questions). [12]

Question 6 (12 marks)

Differentiate between the following paired terms:

(a) Selfish herd effect and Dilution effect [4]

(b) Mimicry and camouflage [4]

(c) Aposematic coloration and disruptive coloration [4]

SECTION B: CHOICE QUESTIONS (Total 60 marks)

Answer any **TWO** questions from this section.

Question 1 (30 marks)

Discuss different mating systems in animals, especially endotherms. Give a specific example for each type of mating system.

Question 2 (30 marks)

Write an essay, discussing interspecific and intraspecific sexual selection in animals.

Question 3 [30 marks]

In chickens, males display dominance hierarchy that is established amongst other ways through physical fights, strength or adornment of certain plumage. The hierarchy enables ranking of males according to their dominant position in the population. Figure 3 presents the proportion of total copulations which males achieved based on their rank in the hierarchy. Study Figure 3 and answer the questions.

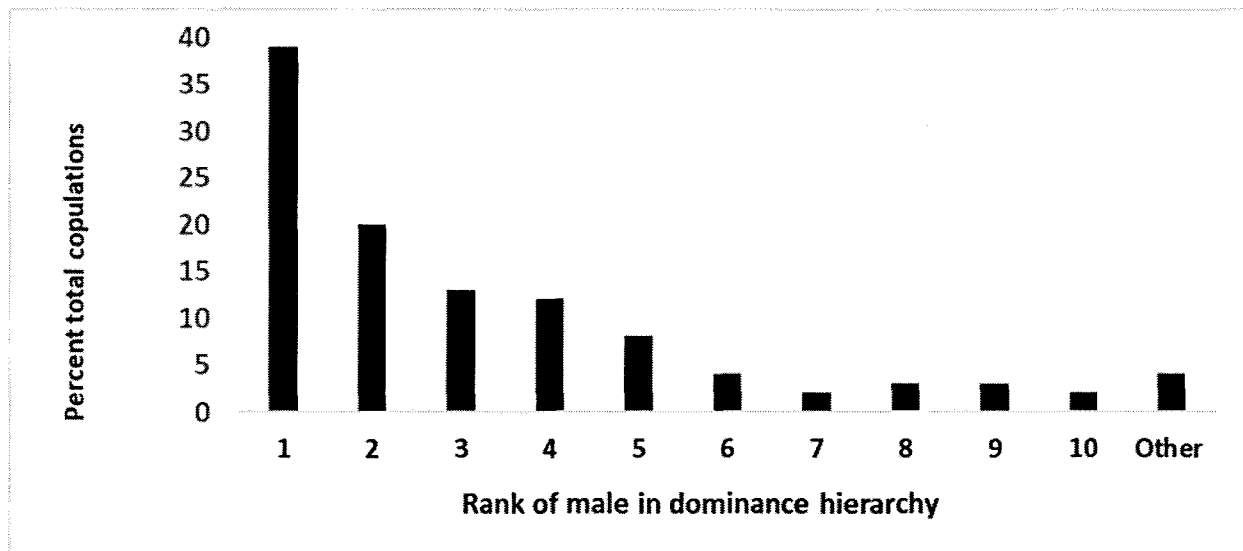


Figure 3. Percentage (%) of total copulations based on rank in the male dominance hierarchy.

- (a) On the basis of what is presented in Figure 3:
- (i) What do results in Figure 3 reveal? [2]
 - (ii) What is the adaptive significance of the behaviour displayed by males in this population? [3]
 - (iii) How may this behaviour have evolved [5]
- (b) Discuss the adaptive significance of group living in animals, using specific examples. [20]

TOTAL MARKS

SECTION A = 60 MARKS
SECTION B = 60 MARKS
GRANDTOTAL = 120 MARKS

***** END OF EXAM *****