

Many fish travel in schools, or large groups. What type of population distribution is this?

Clumped

Uniform

Random

What is something that humans are doing that have led to a decrease in the wildebeest population?

(Disrupting their migratory route

Building fences

Urbanization

Agriculture

Dandelion seeds are dispersed by the wind and grow wherever they land. What type of population distribution is this?

Clumped

Uniform

Random

The female praying mantis consumes the male after mating. What would you expect the sex ratio to be in this population?

Equal 1:1 ratio

More males than females

More females than males

To Get: Measuring Populations Notes
Blue Warm Up Paper
Mark and Recapture Virtual Lab


Homework: Complete Virtual Lab if not done in class

Turn in Quadrat Lab

Population Video

Capture your notes in this section

Method	Description
Direct	
Complete Count <ul style="list-style-type: none">• Aerial• Drive approach	
Indirect	
Mark Recapture	
Quadrat	
Transect	

 (video in youtube instead of safeshare)

Method	Description
Direct	
Complete Count <ul style="list-style-type: none"> • Aerial • Drive approach 	<ul style="list-style-type: none"> ○ Counts the <u>total number of individuals</u> ○ Aerial - <u>uses photos</u> from above ○ Drive - <u>Many people walk in line</u>

and count population along their lines

- ★ ○ Cons - time consuming and costly \$ \$



Indirect	
Mark Recapture	<p>Used for species that are <u>mobile</u> <i>Move animals</i> <u>Traps capture animals</u> -> animals are <u>marked</u> and then <u>released</u> New group of animals are <u>captured again</u> and marked ones are noted Ratio of marked:unmarked is used to estimate pop size</p>
Quadrat	<p>Used for species with <u>limited mobility</u> (plants, snails) <i>don't move</i> <u>Counts organisms in small area</u> Data from small area used to <u>estimate larger area</u> Count in quadrat -> large area estimate</p>
Transect	<ul style="list-style-type: none"> ○ <u>Uses lines that are drawn across an area</u> ○ <u>Count organisms found along line</u> then apply to whole area

With your table partner, decide which method you would use to measure these populations and WHY

Complete count

Mark and Recapture

Quadrat Sampling

Transect

Population characteristic	Choice & reason for choice
High population density	
Low population density	
Clumped distribution	
Uniform distribution	
Random distribution	
Stationary organisms	Quadrat Sampling Transect
Mobile organisms	Mark and Recapture



Mark and Recapture Virtual Lab

1. Go To Weebly for link to lab
or Google "Classzone Virtual Lab"
2. Select "Estimating Populations"
3. Complete the Virtual Lab and record your responses on the packet as you go.
4. Complete ALL conclusion questions
5. Turn in your lab at the end of class

.pdf of notes

Monday Oct 15th: **Virtual Lab: Estimating Population Size**

Click on estimating population size



Directions: Follow the steps and answer the questions below.

1. Why do farmers need to be aware of the grasshopper population? _____

2. Explore the lab to learn what is available for your investigation. List the functions of the following items:

a. Paint and Paintbrush: _____

b. Insect Sweep Nets: _____

c. Large Plastic Container with Lid: _____

3. Click on "Background" and answer the following questions (3 pts):

a. What is a population? _____

b. What method do scientists use to estimate the population size of mobile organisms?

c. What is population density? _____

4. Click "Procedure". Answer this question from your notebook:

A. Can you tell by looking at the meadow how many grasshoppers live in it? _____

B. List the difficulties you might encounter if you tried to determine the population of grasshoppers by simply examining the meadow.

C. What are some steps you can take to make a more accurate estimate of (Hint: you will need to write an answer in the notebook to continue).

5. Fill in the table below with the number of grasshoppers collected during each capture.

	First Capture	Second Capture
# of Grasshoppers in the First Capture (M)		X
Total Marked & Unmarked Grasshoppers in Second Capture (n)	X	
# of Marked Grasshoppers in Second Capture (R)	X	

Lab Notebook Conclusion Questions. Write your answers in the space below each question.

6. What is the estimated population size of the grasshoppers living in this meadow?

7. The population density of these grasshoppers is one indicator of whether or not they are considered a pest and are capable of causing damage to crops and plant life. Normally, if these grasshoppers have a population density of 0-3 grasshoppers per square meter, they don't pose a significant threat. Find the population density of these grasshoppers per square meter. If one acre is equal to 4,047 square meters, then on average, how many grasshoppers would be found in one square meter?

8. Based on the population density you determined, explain whether or not the grasshoppers pose a threat to nearby crops.

9. What are at least 2 factors that might cause changes in the population of grasshoppers?

10. What are at least 2 factors that might affect the accuracy of your estimate?

11. What are the advantages and disadvantages of the capture-mark-recapture method?

