A level Biology Transition Task

If you have any queries relating to the A level Biology transition task or A level Biology in general please contact Mr Fuller at c.fuller@hayesfield.com.

Investigating Populations – Mark, Release, Recapture

During your GCSEs you learnt how to sample non-motile plant and animal species using quadrats and transects. In this transition task you will investigate why biological sampling is necessary and how it ties into the conservation of endangered species. You will then learn a simple, yet useful, sampling technique: mark, release, recapture, which can be used to predict the population of mobile animal species.

TASK TO COMPLETE

Sample the snail population in a location such as your garden or local park using the Mark, Release, Recapture technique and estimate the overall population. Write up your findings in a short report of no more than 2 sides of A4 including any results tables, photographs and diagrams.

Make sure to follow the success criteria on the next page.

Submitting Your Work

All work should be saved as either **.docx** (Microsoft word default) or **.pdf** files. I will not be able to open other file types and mark your work. If you don't know how to save in one of these formats look it up on Google or YouTube.

Your report must not be longer than two sides of A4, longer reports won't be marked after the second page.

Please save your work in the following form *Surname Forename Snails*

All work should be emailed to c.fuller@hayesfield.com

Success Criteria

Success Criteria	Completed
Describe how to carry out the mark-release-recapture technique	
Explain why the mark-release-recapture technique is useful for sampling snail populations	
Suggest a number of variables which need to be controlled to ensure your experiment will be valid	
Suggest how you will control these variables	
Sample the population of snails in one area using the mark-release-recapture technique	
Include your results and calculations of snail population using mark release recapture	
Suggest a number of hypothesis for any difference (or not) of snails between the two areas	
Suggest a number of reasons for why your estimations of snail populations may not be accurate	
Include a small section on one or more areas of snail: - Ecology - Adaptation - Morphology - Reproduction - Evolution	
Include photographs of your sampling sites and field work	
File names include your first name and surname	

Basic Method:

When you are writing up your experiment you will need to modify this method for your own circumstances, don't just copy it verbatim

1. Determine the area that you are sampling – this could be a garden or a park
2. Determine the time you are going to sample for – a minimum of 10 minutes
3. Sample your snail population
4. Mark the shell of each with *clear nail varnish*
5. Place the snails back where you found them
6. Record the number of snails
7. Go back 1-3 days later at the same time of day (and ideally the same weather conditions) and sample again
8. Calculate the population using Mark-Release-Recapture

Useful links: https://www.youtube.com/watch?v=mT1iMyBxF60

Mark – Release – Recapture

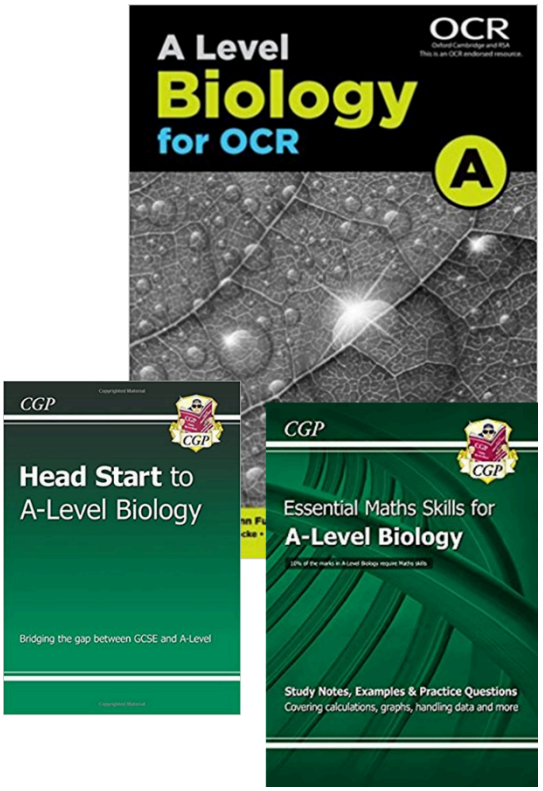
$$N = \frac{MxC}{R}$$

- **N = estimated Number of individuals in the population**
- **M = number of individuals captured and Marked**
- **C = total number Captured the second time (with and without a mark)**
- **R= number of individuals Recaptured (those with a mark)**

Resources to purchase for September

All students are expected to purchase a copy of the course textbook. This will be used to set homework and is an invaluable learning tool. The course textbook is *A level Biology for OCR by Ann Fullick*.

We would also strongly recommend that you pick up two further books to support your learning. The first is a transition book which will help you prepare for the A level course: *Head Start to A-level Biology (CGP A-Level Biology)*. The second is an invaluable tool to support your maths skills whilst studying the course: *A-Level Biology: Essential Maths Skills (CGP A-Level Biology)*



Additional Reading

There are a huge number of popular non-fiction Biology books covering the whole spectrum of biological knowledge. We always recommend that you aim to read three or four per year, often they will open up whole new areas of biology that you never even knew existed.

1. The wasp that brainwashed the caterpillar - Matt Simon
2. Bad science - Ben Goldacre
3. The man who mistook his wife for a hat - Oliver Sacks
4. The immortal life of Henrietta Lacks - Rebecca Skloot
5. The greatest show on Earth - Richard Dawkins
6. On the origin of species - Charles Darwin
7. Almost Like a Whale - Steve Jones
8. Life on the edge - The coming of age of quantum Biology - Jim Al-Khalili
9. Other minds - Peter Godfrey-Smith
10. Your inner fish - Neil Shubin
11. The 6th Extinction - Elizabeth Kolbert