

Biology Summer Independent Learning

Please complete **ALL** of the following tasks, your teacher will check that this has been completed in the first lesson back in September.

Task 1 - 3.7.3 Populations on ecosystems

Several of you missed some of the lessons in the last few weeks so haven't covered all of 3.7.4 Populations in ecosystems. Please use the video links below to help you complete the booklet and the PPQ.

1. Watch the suggested videos covering 3.7.4. Populations in ecosystems. Then complete the 'Population in ecosystems' booklet, including the PPQ (paper copy handed out in lesson).
2. Please memorise the definitions on page 2, you will be tested on these definitions in the first week back.
3. Please produce revision resources for this unit and bring them to college with you in September.

Please watch the following videos covering 7.4 Populations in ecosystems. There will be additional material on the Year 12 Teams page.

Measuring populations:

https://www.youtube.com/watch?v=daH5_hwJY8o&list=PL0Mjub5NT756kVDMLLq1Pbh_vXg1rtGTI&index=5

Populations (factors affecting population size):

https://www.youtube.com/watch?v=J35QIX7b9sc&list=PL0Mjub5NT756kVDMLLq1Pbh_vXg1rtGTI&index=2

Predator Prey cycles:

https://www.youtube.com/watch?v=y84tAo-leLE&list=PL0Mjub5NT756kVDMLLq1Pbh_vXg1rtGTI&index=3

Succession:

https://www.youtube.com/watch?v=f6_f7CJpA&list=PL0Mjub5NT756kVDMLLq1Pbh_vXg1rtGTI&index=4

Learn the following definitions.

Key Word	Definition
Abiotic	<i>non-living</i> factors, i.e. physical and chemical e.g. CO ₂ , O ₂ , water, temperature, salinity, light and mineral ions
Abundance	the number of individuals of a species in a given area
Adaptation	the evolutionary process whereby an organism becomes better able to live in its habitat
Bias	this may happen when individuals of some species are sampled more frequently, or less frequently, than expected. This can cause the population size to be either overestimated or underestimated
Biotic	<i>living/biological</i> factors, e.g. feeding relationships between organisms such as predator- prey relationships, competition, parasites and symbiosis
Community	all the organisms / populations present in a habitat
Distribution	the geographical area within which that species can be found
Ecology	the scientific study of the factors which determine the distribution and abundance of organisms
Ecosystem	the environment and all the organisms that live in an area. This means it is made up of all the abiotic factors and biotic factors in an area
Habitat	the place where an animal (or community of organisms) lives which is characterised by physical conditions and the species of other organisms present
Interspecific competition	competition between individuals of different species
Intraspecific competition	competition between individuals of the same species
Mark–release–recapture	a method commonly used in ecology to estimate the population size of mobile animals such as fast-moving or flying terrestrial animals, such as insects
Niche	it describes how an organism fits into its environment – where it lives and what it does there
Population	all the individuals of one species in a habitat
Predation	a biological interaction where a predator (an organism that hunts and eats other animals) feeds on its prey
Quadrats	a square frame which can be used for ecological surveying to sample plants or slow moving animals.
Random sampling	taking samples in a way that avoids bias, usually carried out when the area under study is fairly uniform, very large, and or there is limited time available
Sample	a part of the ecosystem that is representative of the whole
Species	a group of organisms with similar characteristics that can breed to produce fertile offspring
Transects	a straight line or narrow section through an environment along which observations are made or measurements taken

Task 2 – Review year 12 content

Revise the material that you have covered in year 12 in preparation for your first assessment in September. The grade that you achieve on this assessment along with your progression grade will determine your UCAS predicted grade (please note that the grade that you achieved in your progression exam will carry a higher weighting). The following topics may be assessed:

- Units 1 – 4
- Statistics
- 3.7.3 Evolution may lead to speciation
- 3.7.4 Populations in ecosystems

All resources and questions can be found on the year 12 Teams page - Files - SIL

Use the revision tracker to monitor your progress, date and highlight (RAG) once you have revised a subtopic.

- 1 Review your progression exam, make sure that you've completed all the targets that you set. **There should be evidence of this in your folder.**
- 2 Complete all the LAQ (units 1 – 4, 3.7.3 and 3.7.4) in black pen and then mark your answers in green pen. Produce flashcards/Q&A of the LAQ mark schemes and memorise.
- 4 Complete the data analysis PPQ
- 5 Read through the statistics booklet, complete the SD and statistics PPQ

Task 3 Required practical 9 - Respiration

Watch the YouTube clip and answer the following questions:

https://www.youtube.com/watch?v=1YUONb7_Cls&list=PL0Mjub5NT75746Ok9jijVZoNXjrEzU53G&index=14&t=0s

1. State the independent variable in the investigation.
2. State the dependent variable in the investigation.
3. State 2 control variables and explain how they are kept constant.
4. What is the purpose of the oil?
5. Why does the fluid move?



Task 4 Nutrient Cycles

Watch the following videos:

Nitrogen cycle introduction https://www.youtube.com/watch?v=H5phG_Ae6M

Nitrogen cycle simplified <https://www.youtube.com/watch?v=LS4rAyvmZ3U>

Phosphorus cycle:

<https://www.youtube.com/watch?v=zh1SN9sMbh4&list=PL0Mjub5NT757o0IfLjBoIpOEHgugr3Gnl&index=6>

- Draw out a version of each nutrient cycle. Try it from memory first.
- Challenge: Try to make a version of each cycle that is in a different orientation, but still includes all the steps. (the ones given to you in exams often look different to the ones in textbooks)

You should be able to draw both nutrient cycles from memory and explain the processes involved.