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# Environmental Science A Level Summer Work

Welcome to Environmental Science! As a student of Environmental Science, you will learn how our environment works and how humans are changing it. You will investigate the cause and effects of environmental issues, covering the living and physical environment, biological and energy resources, and pollution. You will also have the opportunity to do laboratory work and a range of field study activities and learn from real-life case studies to support your learning.

Before starting the course, you have two tasks to complete to help you prepare and to get an idea of what it is like to be an environmental scientist. These preparatory tasks will get you started on developing vital skills required for investigative and analytical work in the field of Environmental Science.

## Task 1: Making observations from a sit spot

Environmental Science is guided in its progress by the scientific method, a key stage of which is to make observations. Observation is a skill that requires practice and patience.



**Objectives:**

- Develop your skills of observation.
- Practice recording your observations.
- Develop questions and further research from your observations.

**Task:**

- Find a 'sit spot' – this should be outside and somewhere you can sit quietly and safely for several 20 minute sessions (if you can't get outside then find somewhere that has a view of the outside)
- You will observe and record what you find in that spot over a period of time.
- Try to visit the spot in different weather conditions and time of day.
- You will need a pencil, pen and a notebook.
- Read the safety information, then follow the method below.

**Safety:**

- As a student working outdoors, your personal safety should always be your top priority. Always be aware of your surroundings and any potential dangers.
- Plan for the weather and wear appropriate clothing. Consider using suncream and a shady location if sunny.
- Look out for uneven terrain, slippery surfaces and unstable structures and take precautions to avoid accidents.
- DO NOT ATTEMPT TO DO ANY OF THIS WORK IN OR AROUND A BODY OF WATER. There is a risk of drowning in even relatively shallow water so please keep this study on dry land.

**Method:**

- On a clean page record the heading information: day, date, time, weather and location/habitat.
- Try to sit as quietly and still as possible, eventually any wildlife will start to ignore you – this might take 10 minutes or so.
- **Observing animals:**
  - Select two or three species to focus on for observation. Include a variety of animals such as birds or insects, aiming for a diverse selection.
  - Draw diagrams or take photos of the animals.
  - Write down what the animals are doing and note their interaction with other living organisms and non-living factors. Record any other interesting observations about behaviour, appearance or characteristics.
  - Estimate the population size in the area – is it rare, frequent, abundant?
  - Identify the species by comparing their physical characteristics with the guides provided below.
- **Observing plants:**
  - Select two or three species to focus on for observation.
  - Draw diagrams or take photos of the plants.
  - Note any unique features, growth patterns or adaptations of the plants.
  - Record any interactions between plants and the environment (such as soil composition, sunlight, water availability) and other living organisms.
  - Estimate the population size in the area – is it rare, frequent, abundant?
  - Identify the species by comparing their physical characteristics with the guides provided below.
- Repeat the process in different conditions / times and record different organisms each time or try to improve the accuracy of your initial observations.
- Away from the sit spot, research and write about the organisms you have identified. Look out for – distribution and habitat, population numbers, size, diet, behaviour. Does what you have found out in your research reflect your observations? Does it raise any questions you might want to investigate?

Websites to help with identification:

- Tree identification: <https://www.woodlandtrust.org.uk/trees-woods-and-wildlife/british-trees/>
- Garden birds: <https://www.lovethegarden.com/uk-en/article/19-common-british-birds-you-can-find-your-garden>
- Common weeds: <https://www.rhs.org.uk/advice/common-weeds>

B. Leach 22, MAY 2013  
 CA, Mendocino Co, N. Angelo Reserve,  
 S Fork Eel River, NW of Fox creek  
 Cabin along Eel River

9:44  
 Conditions: Sunny, consistent hot mellow breeze, cloud coverage about 30%  
 It took me a while to settle in today. I initially intended to go North of Fox creek cabin along Eel River to a spot called rattlesnake rocks, but I accidentally followed the river southward and realized this a little after I passed the turn off for Walker Meadow loop. So I crossed the river to the N/W side and hiked back down it, through a mess of fallen trees, grasses, slopes, and rocks until I made it past the cabin, north, approx 1/4 mile or so. Once I got there I crossed back to the east side of the river and looked for insects along the water edge. Then I got distracted by a duck - it looked like a mallard - so I followed it, and once it flew off I peered in the direction of its fleeing and saw a bunch of baby ducks lined up on a rock. I jumped back onto the trail, went in the direction of the ducks, but

*Pre-rain showers tonight and then clouds will cover it occasionally causing enough to become shaded.*

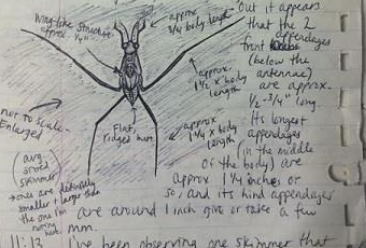


B. Leach 22 MAY 2013  
 The skimmers have 6 appendages, 4 long, coming from the bottom end of its body, and two short, coming from its head region. They have two antennae extending from under its eyes at the top of its head. Their body is seed shaped, coming to a point at the butt. They are mostly dark brown/grey (the back of their head, thorax, and appendages), with light brown/tan sides and a very light tan belly (almost yellow). When fully stretched out it appears that the 2 appendages (below the antennae) are approx 1 1/4 inches long. Its longest of the body appendages are approx 1 1/4 inches or so, and its hind appendages are around 1 inch give or take a few mm.

11:13 I've been observing one skimmer that I caught for about 45 minutes or so.

*Wing-like structures approx 7mm*  
*approx 1 1/4 body length*  
*but it appears that the 2 appendages (below the antennae) are approx 1 1/4 inches long*  
*Its longest of the body appendages are approx 1 1/4 inches or so, and its hind appendages are around 1 inch give or take a few mm*

*not to scale - enlarged*  
*flat, ridged horn*




## Task 2: Setting conservation priorities

Wildlife conservation involves interfering in the habitats and populations of wild species in ways that are intended to be beneficial for conservation. This involves making choices and decisions that may be subjective and based on partial knowledge.

### Objectives:

- Develop research and analysis skills.
- Prioritise decisions based on information.

### Task:

- Below is a list of extant (still in existence) species found globally:
  - *Loxodonta africana*
  - *Leptodactylus fallax*
  - *Latimeria chalumnae*
  - *Carcharhinus hemiodon*
  - *Apis mellifera*
- You have been given £50 million to spend on wildlife conservation. Decide how you would prioritise conservation of the above species and explain your choice in no more than 500 words.
- Consider the following questions when making your decisions:
  - What is the present-day situation: species present, populations, current changes in abiotic factors?
  - Is the conservation of a particular species potentially beneficial or harmful to other species?
  - What actions could be taken to conserve the desired species?
  - Can the outcomes be accurately predicted?
  - Can the impacts be monitored accurately to inform further decision-making? If so, how?

**Remember to bring all your work with you to your first  
Environmental Science lesson in September!**

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## Environmental Science textbook

Although you will have access to the textbook during lessons, we recommend you buy your own copy for use outside of the classroom.

At A-level you will be following the AQA Specification and will study the following topics:

- The Living Environment
- The Physical Environment
- Energy and Pollution
- Biological Resources
- Sustainability
- Scientific Methods

The textbook can be purchased from the publisher, Amazon or sometimes eBay.

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