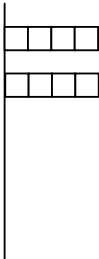


Activity 1: Investigating whether there is a correlation between altitude and the abundance of compact rush

AQA GCE Biology : Unit 4; BIOL4; 3.4.1 The dynamic equilibrium of a population is affected by a number of factors

APPROXIMATE TIME: 2.5 HRS

Lesson	Spec. Ref	Objectives	Teaching activities	Resources
1	3.4.1	<p>1. Describe a method to sample along an environmental gradient</p> <p>2. Collect valid data</p> <p>3. Assess the strength of a correlation with statistical analysis</p>	<p>Intro practical on slide 1 and objectives</p> <p>Starter: Discuss with students how to measure plant abundance and which would be best for rushes (frequency; percentage cover or density; pros and cons of each method) <i>For this activity we are using frequency: quick; less subjective than % cover, can't identify individual plants easily</i></p> <p>Main: In class: i) Describe line transect and its use ii) Describe how to measure increase in altitude using spirit level iii) Divide class up giving specific tasks: <ul style="list-style-type: none"> Pair to measure altitude (start at 0 and measure inc) Pair to organize data collection, record class results, and calculate mean frequency Other pairs to do 4 quadrats per position along the line transect, as directed by recording pair Outside: iv) Lay 30m-40m transect up the hill, sample every 2m v) Optional extra variables to sample (if more time and want to carry on at school): <ul style="list-style-type: none"> take soil sample (2 tsp in small film canister) – to weigh/ dry out overnight in oven/ reweigh and calculate % humidity record soil pH (use pH paper; plastic cup and distilled water) </p>	<p>Powerpoint presentation</p> <p>Calculators Graph paper Rulers Pencils Rubbers</p> <p>Chi-squared critical values sheet</p> <p>50m tape measure Quadrats (1 per pair) 2 Metre rules Long spirit level</p> <p>Optional extras need to be brought from school: Plastic cups, distilled water, pH strips – Film canister and lid (or some type of sample jar) Trowel/teaspoon Pens to label canisters</p>

			<p>In class:</p> <p>vi) Recording pair put up/read out class results</p> <p>vii) All students record data as scattergram (rush frequency vs increase in altitude) Draw line of best fit. <i>Refreshment opportunity here!</i></p> <p>viii) Discuss if there is a correlation from graph</p> <p>ix) Go through use of stats on powerpoint</p> <p>x) Students apply stats to their results, following method outlined on powerpoint</p> <p>Plenary: Does correlation = causation? Discuss results: is there a statistically significant correlation? Is altitude causing the rush abundance to vary? What other biotic and abiotic factors might be doing this?</p> <p>CHECK OK WITH LESSON OBJECTIVES At school – could see if correlation with % moisture content is stronger.</p>	<p>Transect/quadrat set up</p> 
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