Version 1.0 07/09

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Environmental Studies 1441

ENVS1 The Living Environment

Report on the Examination

2009 examination - June series

Further copies of this Report are available to download from the AQA Website: www.aqa.org.uk

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX
Dr Michael Cresswell Director General.

General

This was the second paper of the first unit of the new specification. There were some very detailed and accurate answers, but the majority of the candidates' responses lacked precision. It was apparent that very few candidates could use the terminology of the subject with confidence. Notable examples include: "marine" in reference to freshwater, dolphins and whales referred to as "fish" and confusion of pesticides and fertilisers. Poor English was very much in evidence and, overall, there appeared to be a lack of scientific understanding. This is disappointing for an AS level science examination.

Many marks were lost through poor examination technique. Candidates frequently did not pay attention to the mark allocation, for example only two points given for a four mark question. Rewriting the stem of the question was also very commonly seen. Clearly this wastes valuable time and space. Candidates should be reminded of the need to regard the space allocation as an important guide and that they ought to write in the designated areas on the paper.

There were few very good and very poor scripts. Both the most able and weaker candidates had opportunities to demonstrate their understanding.

Centres are reminded that the aim of Unit One (the Living Environment) is to apply scientific understanding to the conservation of wildlife. It is helpful if candidates can be exposed to a wide range of case studies that illustrate the principles of wildlife conservation.

Question 1

This question was not particularly well answered, with relatively few gaining full marks. As in the previous specification, the most usual opening question (five marks) tests recall of definitions. Most knew SSSI and MNR.

Question 2

(a) This was a straightforward question and most scored both marks. The most common errors were: "deforestation" – with no reason given – and vague references to "climate change". "Pollution", by itself, was also insufficient.

(b) Very few got two marks for this question, even those who knew what an abiotic factor was. This became a good discriminator. There were some who described biotic factors. Many candidates revealed that they had not read the question sufficiently carefully, because they incorrectly described how abiotic factors would affect the cleared areas *between* the forest fragments, rather than the conditions *inside* the forest areas.

(c) Most candidates found this hard. Very few got more than one or two marks, mainly because they hit on one idea, usually lack of food supply, and wrote extensively about it to the exclusion of any other points. There were a few excellent answers, where candidates realised that fragmentation would also affect breeding populations with a shortage of potential mates and the effect of this on gene pools. Some did not read the question carefully enough, or ignored the contents of the stem, and based answers on the fact that the antbirds *would* fly between the forest fragments.

(d) (i) Only about a third of candidates correctly identified the carrying capacity as being the point where the curves cross, and only a proportion of those actually placed the cross on the x-axis, as asked.

(d) (ii) Most got this correct, by far the most common response was about the availability of food.

Question 3

(a) (i) About half got both marks for this, which were typically from the first two marking points. Few commented on the effects that overharvesting might have on the mean age or size of the individuals within a population. A minority thought the population would rise or misunderstood the question and described the effect of the harvest on the food chain.

(a) (ii) Just over half of the candidates answered this correctly. The remainder frequently gave wild guesses reflecting little understanding of the graph.

(a) (iii) This was generally quite well answered, with nearly half getting both marks. Those who did not often responded with:

- single word answers with ambiguous meaning e.g. “population”, “birth” or “death”
- harvesting “effort”
- references to the size of the food source / habitat.

(a) (iv) The majority got both marks. Those who did not gave two aspects of the same marking point e.g. two ecological reasons or moral AND ethical reasons. Understanding of the terminology was often weak – particularly of ‘aesthetic’ where the expansion made it obvious that the term was not properly understood.

(b) It was apparent that many did not read this question sufficiently carefully. The stem required a focus on *accidental* threats by *methods* of food production. Thus a lot of answers did not link an effect to a method used in food production and merely talked about gathering the crop which deprived other organisms of a food source/prey, or that “overexploitation” causes accidental decline. Some only wrote about <u>one</u> method and / or effect, not noticing that the question indicates that more than one method was required. Fishing by-catch, however, was well known and often clearly described.

Question 4

(a) The first marking point was well known- the breakdown of dead organisms and the role that detritivores have in nutrient cycling. The second mark proved to be a useful discriminator, because only the most able got it. However, there were good references to earthworms mixing the soil and providing food for birds and other organisms. Only the very best correctly distinguished the different roles of detritivores and decomposers. Centres should aim to ensure that candidates can differentiate between the two groups.

(b) The answers to this question were varied. There was a great deal of confusion about an appropriate sampling technique for ground beetles in a woodland. It is expected that candidates are reasonably familiar with common groups of organisms and habitats and the appropriate use of the sampling methods listed in the specification. Although it was

anticipated that candidates should describe the mark-release-recapture method, those who did not could still gain full marks. These were for selecting a suitable trapping method; a suitable area or sampling time for collecting the beetles; doing enough repeats to enable a mean to be calculated of a sample area; and using this to estimate the number in the whole woodland.

Accounts of the Lincoln Index method were common but usually lacked clarity and detail. This question is very similar to those which often appeared on the ESC 3 papers. Common errors/omissions were:

- No sampling method described – just vague reference to collecting a sample of beetles;
- No comment on how pitfall traps would be placed or how many would be needed;
- Lack of precise detail throughout – e.g. no comments about the non-harmful marking procedure or the need to leave the beetles long enough to reintegrate – so candidates missed out on easy marks;
- Leaving pitfall traps for extraordinary time periods ranging from ½ an hour to a month;
- Confusion about the marking process – a lot seem to think that you go on marking and releasing until all the beetles are marked;
- Quadrat sampling or Tullgren funnels – neither of which would be appropriate
- Incorrect formula for Lincoln Index (frequently mis-spelt)

It is disappointing to see how many cannot spell beetle or quadrat. Some really inappropriate methods were seen – notably putting up posters and leaflets and asking the local people to telephone if they saw one!

Question 5

(a) (i) Surprisingly, fewer than 20 % got this correct, with Cost-benefit analysis the most frequent wrong answer.

(a) (ii) This question proved to be difficult, with fewer than 10 % getting both marks. 40 % got one mark. Water was the most common correct response. Climatic factors and references to habitats were the typical wrong answers.

(b) (i) Fewer than 40 % got both marks on what should have been a straightforward question (especially considering the frequency with which it appeared on the ESC 3 papers). Candidates should be reminded that when the stem says “Show your working”, there is a mark for showing their working out.

(b) (ii) There were very few high scores for this question. Although many did recognise that there was a higher species diversity in woodland A, very few explained the significance of this. It is expected that candidates can link higher diversity to more niches/food sources and greater stability. Many candidates also used the table to comment on the increased number of native trees in woodland A and used the map to comment on both the screening effect of A and the fact that woodland B would impede the straightening of the stream. Some, however, stated that there were more trees in B (88 compared to 87!) and more species in woodland A, despite the table showing equal numbers of different tree species present.

Question 6

(a) (i) There were some clear and detailed answers, but the norm was vague and brief. statement of a harmful practice was not enough for a mark, it had to be linked to its effect on wildlife. Far too many candidates appear to be unaware of the difference between the effects of fertilisers and pesticides – statements of pesticides causing eutrophication were all too common. Similarly, descriptions of fertilisers having a directly toxic effect and being passed through food chains were also seen. Accurate accounts of biomagnification or bioaccumulation were rare.

(a) (ii) This question was quite well done, although again, some answers tended to describe only one method – at length! Planting hedges/trees, beetle banks, set aside, supplementary feeding and boundary strips. were all well known. Incorrect responses often referred to keeping or preventing the loss of existing wildlife rather than encouraging more wildlife; or vague comments about using less machinery on the farm.

(a) (iii) About a third of candidates got this right.

(b) (i) Those who knew what a plagioclimax is found these two questions to be relatively easy. About a quarter got both marks for this part.

(b) (ii) About 60 % got one mark, usually mentioning grazing or mowing. Fewer got the second mark, explaining how the management maintains the plagioclimax.

Mark Ranges and Award of Grades
Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA Website.