

2014 AP[®] BIOLOGY FREE-RESPONSE QUESTIONS

3. As part of a new suburban development, a sports complex consisting of athletic fields and buildings is constructed in a formerly wooded area.
- (a) **Predict** ONE ecological consequence on the local plant community that is likely to result during the site preparation and construction of the sports complex. **Justify** your prediction.
 - (b) To maintain the playing fields, large quantities of water and chemicals are applied regularly to the grass-covered areas. **Predict** ONE effect on the local animal community that might result from regular use and maintenance of the playing fields. **Justify** your prediction.

AP[®] BIOLOGY

2014 SCORING GUIDELINES

Question 3

As part of a new suburban development, a sports complex consisting of athletic fields and buildings is constructed in a formerly wooded area.

- (a) **Predict** ONE ecological consequence on the local plant community that is likely to result during the site preparation and construction of the sports complex. **Justify** your prediction. **(2 points maximum; LO 4.16, 2.21, 4.21)**

Predicted consequences on plant community (1 point)	Justification of prediction (1 point)
Plant death / Loss of plant biomass	<ul style="list-style-type: none"> • Removing trees/shrubs • Pollution from construction equipment • Fewer individuals for reproduction • Altered habitat, e.g. change in amount of sunlight, obstruction by buildings, isolation of populations
Reduced number of plant species / Loss of biodiversity	<ul style="list-style-type: none"> • Removal of trees/shrubs • Reduced habitat • Pollution from construction kills local species
Decreased genetic diversity	Reduction in population size / bottleneck
Habitat loss	<ul style="list-style-type: none"> • Removal of trees/shrubs • Soil loss due to lack of ground cover
Increased success of sun-tolerant plants	Removal of shading trees
Introduction / Immigration of new plant species	Creation of new habitat and landscaped environments

AP[®] BIOLOGY

2014 SCORING GUIDELINES

Question 3 (continued)

(b) To maintain the playing fields, large quantities of water and chemicals are applied regularly to the grass-covered areas. **Predict** ONE effect on the local animal community that might result from regular use and maintenance of the playing fields. **Justify** your prediction. (2 points maximum; LO 4.16, 2.21, 4.21)

Predicted consequence on animal community (1 point)	Justification of prediction (1 point)
Harm / Death to animals	<ul style="list-style-type: none"> • Exposure to toxic chemicals • Toxic chemicals accumulate through the food chain Persist in the environment • Contaminated groundwater
Emigration Displacement	<ul style="list-style-type: none"> • Loss of habitat and/or food • Loss of access • Exposure to toxic chemicals
Loss of native animal biodiversity	<ul style="list-style-type: none"> • Loss of plants on which the animals depend • Loss of habitat
Mutations	Chemicals effect on DNA
Improved conditions for animals	Increased food sources
Immigration of new animal species	Formation of new habitat
Less potable/drinking water for animals	<ul style="list-style-type: none"> • Increased salinity in water reservoir • Removal of water from reservoir / wells • Contamination of water with chemicals