

## **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.

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

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**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 <b>(1 point)</b>	Justification of prediction <b>(1 point)</b>
Harm / Death to animals	<ul style="list-style-type: none"><li>• Exposure to toxic chemicals</li><li>• Toxic chemicals accumulate through the food chain Persists in the environment</li><li>• Contaminated groundwater</li></ul>
Emigration Displacement	<ul style="list-style-type: none"><li>• Loss of habitat and/or food</li><li>• Loss of access</li><li>• Exposure to toxic chemicals</li></ul>
Loss of native animal biodiversity	<ul style="list-style-type: none"><li>• Loss of plants on which the animals depend</li><li>• Loss of habitat</li></ul>
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"><li>• Increased salinity in water reservoir</li><li>• Removal of water from reservoir / wells</li><li>• Contamination of water with chemicals</li></ul>