

## AP English Language and Composition

**Suggested reading time—15 minutes**

**Suggested writing time—40 minutes**

**Directions:** The following question is based on the accompanying seven sources.

This question requires you to synthesize a variety of sources into a coherent, well-written essay. When you synthesize sources you refer to them to develop your position and cite them accurately. *Your argument should be central; the sources should support this argument. Avoid merely summarizing sources.*

Remember to attribute both direct and indirect citations.

### Introduction

Invasive species are nonnative plants and animals that thrive outside of their natural range and may harm or endanger native plants and animals. As producers and consumers in our global society, we affect and are affected by species introduced accidentally or intentionally to a region. Currently, some people argue for stricter regulations of imported species to avoid the possibility of unintended negative consequences. Others, however, claim that the economies and basic resources of poorer nations could be improved by selective importation of nonnative species.

### Assignment

Read the following sources (including any introductory information) carefully. **Then write an essay in which you evaluate what a business or government agency would need to consider before transferring a hardy but nonindigenous species to another country. Synthesize at least three of the sources for support.**

Refer to the sources by their titles (Source A, Source B, etc.) or by the descriptions in the parentheses.

- Source A (Photo)
- Source B (Dybas)
- Source C (Aquaculture)
- Source D (Devine)
- Source E (Baskin)
- Source F (Spotts)
- Source G (Lost Crops)

**Source A**

Photo Archive. "Animal Invaders and Pathogens." The Global Invasive Species Initiative. The Nature Conservancy 2005. 28 April 2006  
<<http://tncweeds.ucdavis.edu/photos.html>>.

*The following is a photograph of balsam fir trees killed by an infestation of balsam woolly adelgids, insects accidentally imported to the United States from Europe.*



(c) John Randall

**Source B**

Dybas, Cheryl Lyn. "Invasive Species: The Search for Solutions." BioScience 54.7 (2004).

*The following is an excerpt from a science journal.*

SARS, a viral respiratory illness, is transmitted by person-to-person contact. First reported in Asia in February 2003, the illness spread over the next few months to more than two dozen countries in North America, South America, Europe, and Asia. During the SARS outbreak of 2003, a total of 8098 people worldwide became sick, according to the World Health Organization; of these, 774 died. In the United States, there were 192 infected individuals, all of whom recovered. Public health officials used isolation and quarantine measures to control the outbreak of this infectious disease.

But the story doesn't end there. On 13 January 2004, the US Department of Health and Human Services banned import of civets—small catlike mammals related to the mongoose and native to Africa and the East Indies—whether alive or dead. Wild animal traders, it turns out, show a higher incidence of exposure to the SARS virus. If humans can acquire infection directly from animals like civets, scientists think, SARS may have been introduced to new areas by multiple routes. The suspects implicated in this case? An almost infinitely complex web of interactions among humans, animals, and continents—and an exponentially increasing number of routes bringing them together in unprecedented numbers. The means? Planes, trains, ships, and automobiles.

### Source C

Hewitt, Chad L., Marnie L. Campbell, and Stephan

Gollasch. Alien Species in Aquaculture:

Considerations for Responsible Use. Gland,

Switzerland: International Union for Conservation

of Nature and Natural Resources, 2006.

The following excerpt is taken from a work that examines the practice of farming oceans.

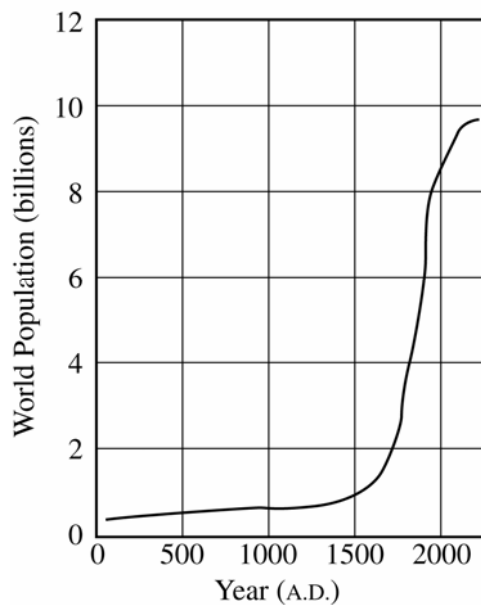
The human population has surpassed 6 billion people (Figure 1), with increasing pressures placed on infrastructure, food security and environmental resources (McMicheal, 2001). . . .

Expectations for aquaculture [fishing and farming the sea] to increase its contribution to the world's production of aquatic food are very high, and there is also hope that aquaculture will continue to strengthen its role in contributing to food security and poverty alleviation in many developing countries. Aquaculture offers opportunities to alleviate poverty, increase employment and community development, reduce overexploitation of natural coastal resources, and develop food security, specifically in developing countries.

Due to this worldwide increasing demand for aquatic food products, aquaculture is now one of the most important and fastest growing sectors within the fisheries sector, specifically for marine aquaculture activities. Most of global aquaculture output is produced in developing countries, and, significantly, low-income food-deficit countries. However, it is also recognized that aquaculture encompasses a very wide range of different farming practices with regard to species (including seaweeds, molluscs, crustaceans, fish and other aquatic species groups), environments and systems, often with very distinct resource use patterns, offering a wide range of options for diversification of avenues for enhanced food production and income generation in many rural and peri-urban areas.

In order to rapidly and cost-effectively develop and diversify aquaculture interests, commercial

Figure 1



enterprises in several countries have turned to pre-existing aquaculture species from other regions, such as the Japanese Oyster, (*Crassostrea gigas*), the Atlantic Salmon, (*Salmo salar*), and the California abalone, (*Haliotis rufescens*). By using these species, research and development costs are minimised through use of overseas research and development outputs. Similarly, these new enterprises can utilise pre-existing markets with well established brand identity to create a more rapid profit.

**Source D**

Devine, Robert. Alien Invasion: America's Battle with  
Non-Native Animals and Plants. Washington, DC:  
National Geographic Society, 1998.

*The following is an excerpt from a book about the impact of imported plants and animals.*

Crop-killing microbes worry farmers all over the world. What they fear is what happened during the early and mid-1990s to Jenny and Delan Perry and other papaya growers on the Big Island of Hawaii. The Perry's 70-acre farm lies about 3 miles from the ocean in a rural area near Kapoho, a tiny town on the eastern side of the Big Island. This area is—or was—the heart of the island's papaya region. To reach their farm, I left the blacktop and crunched over a mile of lava-gravel road, curving past abandoned sugarcane fields, banana trees, and coconut palms.

After I met up with Jenny Perry, we drove out into the fields. Perry . . . and her husband bought this farm in 1973 and planted a variety of crops, including papaya, in 1980. Conditions proved perfect for papaya, and within a couple of years they had planted papaya trees on most of their acreage. The Perrys and the papayas thrived. But in 1992, the Perrys saw evidence of an exotic microbe: papaya ringspot virus had invaded their fields. By 1994, the virus had erupted into a full-blown epidemic. Within a few years, the local papaya industry had nearly vanished—and so had their livelihood.

**Source E**

Baskin, Yvonne. A Plague of Rats and Rubbervines: The Growing Threat of Species Invasions. Washington, DC: Island Press, 2002.

*The following is excerpted from a book about the threat posed by invasive species.*

World trade drives the rearrangement of the living world in two ways, one intentional and the other accidental. The exotic plants and animals we import or move intentionally beyond their natural ranges—pets, flowering plants, boutique crops, plants for restoring degraded lands, animals destined for the table or for release into woods, fields, and streams as game animals—provide an increasing reservoir of potential invaders.

The organisms such as snakes and turtles and nursery plants that we import intentionally, however, pale in numbers beside the masses of smaller living things we set in motion incidentally. These are the hitchhikers that ride in ballast tanks or aboard the hulls of ships, in airplane cargo holds and cabins, in the nooks and crannies of shipping crates and containers, or mingled with grain, fruits, vegetables, cut flowers, timber, minerals, soils, and the other goods bought, sold, and shipped worldwide.

**Source F**

Spotts, Peter N. "Australia's Most Unwelcome Guest."

The Christian Science Monitor 7 April 2005.

27 May 2005

<<http://www.csmonitor.com/2005/0407/p13s02-sten.html>>.

*The following is excerpted from an online article about cane toads in Australia.*

It seemed like a good idea at the time. In 1935, two types of beetles were chewing through Queensland's sugar-cane fields. In desperation, growers turned to cane toads to battle the insects. They'd heard glowing reports about the warty, fist-sized amphibians from growers at a conference in the Caribbean two years earlier, and successfully lobbied to import them.

Australia would come to rue that day.

Instead of concentrating on beetles, the voracious toads began munching on almost everything in sight: insects, bird eggs, and even pet food. Their poison killed predators—even pets—who tried to eat them. And instead of staying put in cane fields, they began to spread along a broad swath of the country.

In recent years, the cane toad has become a poster child for the problem of invasive species here, forcing the government to embark on a multimillion-dollar campaign to stop them. . . .

Introducing them "was not an inspired idea," says Ross Alford, professor of biology at James Cook University here in Townsville.

By Peter N. Spotts. Reproduced with permission from the April 7, 2005, issue of *The Christian Science Monitor* (www.csmonitor.com). (c) 2005 The Christian Science Monitor. All rights reserved.

### Source G

National Research Council Report. Lost Crops of the Incas: Little-Known Plants of the Andes with Promise for Worldwide Cultivation. Washington, DC: National Academy Press, 1989.

*The following is excerpted from a book about specific plants.*

To the Incas, quinoa (*Chenopodium quinoa*) was a food so vital that it was considered sacred. In their language, Quechua, it is referred to as *chisiya mama* or “mother grain.” Each year, the Inca emperor broke the soil with a golden spade and planted the first seed.

In the altiplano especially, quinoa (pronounced *keen-wa* or *kee-noo-ah*) is still a staple. For millions it is a major source of protein, and its protein is of such high quality that, nutritionally speaking, it often takes the place of meat in the diet. Outside the highlands of Argentina, Bolivia, Chile, Colombia, Ecuador, and Peru, however, the cultivation of quinoa is virtually unknown. . . .

Quinoa seems particularly promising for improving life and health in marginal upland areas. It probably could be cultivated in highland tropical regions, such as elevated parts of Ethiopia, the Himalayas, and Southeast Asia. The malted grains and flour hold promise as a weaning food for infants, and it is noteworthy that child malnutrition is common in many of these areas. Also, quinoa is one of the best leaf-protein-concentrate sources. . . .

The plant’s daylength requirements (for flowering) are, for now, likely to limit its successful cultivation in North America, Europe, Japan and other such industrialized areas to types that come from equivalent latitudes in the Andes (for example, from Chile). At present, these are not readily available. On the other hand, tall, late-maturing, daylength sensitive types could prove productive for forages\*, a use for which flowering is unnecessary.

Despite this limitation, the plant has already shown some promise in tests of farm-scale cultivation in high altitudes of Colorado and at near sea level in Washington and Oregon states as well as in England and Scandinavia.

\* food for domestic animals