

7

Science Standard  
7.3.e.



# Responding to Environmental Change

## **California Education and the Environment Initiative**

Approved by the California State Board of Education, 2010

### **The Education and the Environment Initiative Curriculum is a cooperative endeavor of the following entities:**

California Environmental Protection Agency  
California Natural Resources Agency  
California State Board of Education  
California Department of Education  
Department of Resources Recycling and Recovery (CalRecycle)

### **Key Partners:**

Special thanks to **Heal the Bay**, sponsor of the EEI law, for their partnership and participation in reviewing portions of the EEI curriculum.

Valuable assistance with maps, photos, videos and design was provided by the **National Geographic Society** under a contract with the State of California.

### **Office of Education and the Environment**

1001 I Street • Sacramento, California 95814 • (916) 341-6769

<http://www.CaliforniaEEI.org>

© Copyright 2011 by the California Environmental Protection Agency

© 2013 Second Edition

All rights reserved.

This publication, or parts thereof, may not be used or reproduced without permission from the Office of Education and the Environment.

These materials may be reproduced by teachers for educational purposes.



## **Lesson 1 Adapting to Environmental Change**

1	Coyote in California	2
---	----------------------	---

## **Lesson 2 What Causes Extinctions?**

2	Extinct Species	3
---	-----------------	---

## **Lesson 3 Human Population Growth and Extinction**

3	Human Population	4
4	Graphing Population Data	5
5	Graphing Population Data Answer Key	6
6	California Population Graph	7
7	California Population	8

## **Lesson 4 Natural Resources and Extinction**

None required for this unit.

## **Lesson 5 Human-Caused Change in Ecosystems**

8	Coastal Dunes	9
9	High Desert	10
10	Kelp Forest	11

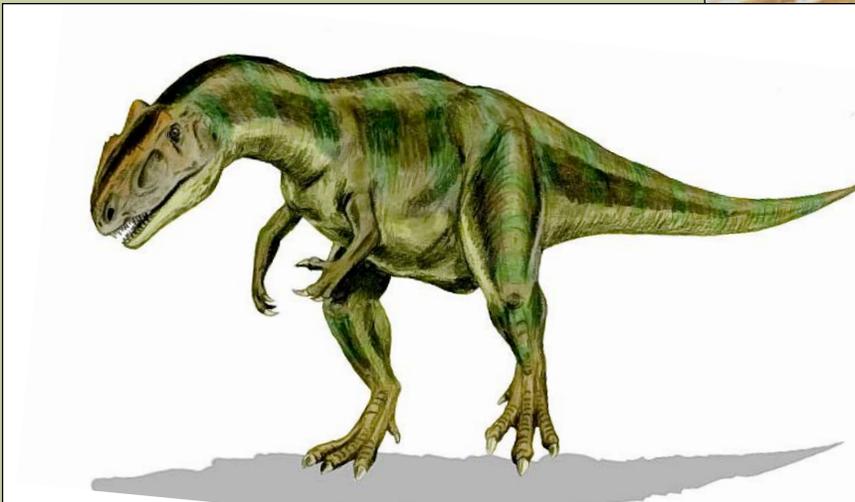
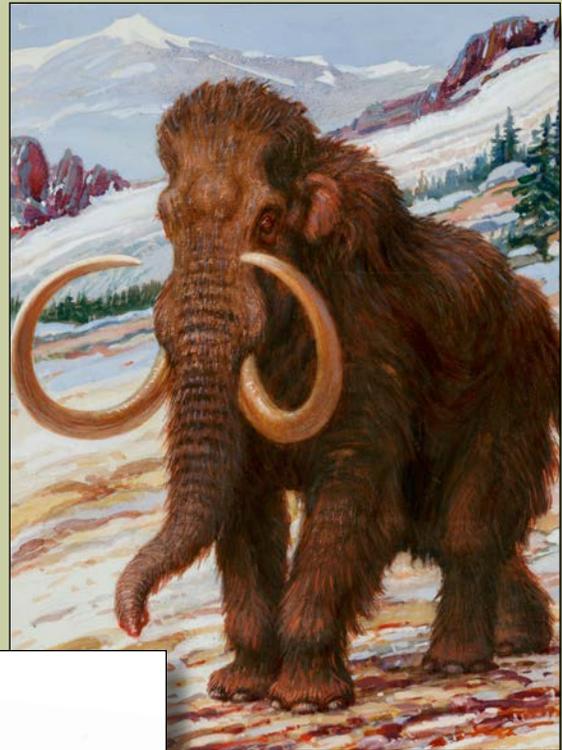
## **Lesson 6 When Species Cannot Adapt: A Discussion**

11	Survey Questions	12
----	------------------	----

## VA #1 Coyote in California



### VA #2 Extinct Species



## VA #3 Human Population

Which of the choices below represent an estimate of the population for the following areas in 2008?

- World
- United States
- California
- Los Angeles County

a. 10 million

c. 300 million

b. 38 million

d. 7 billion

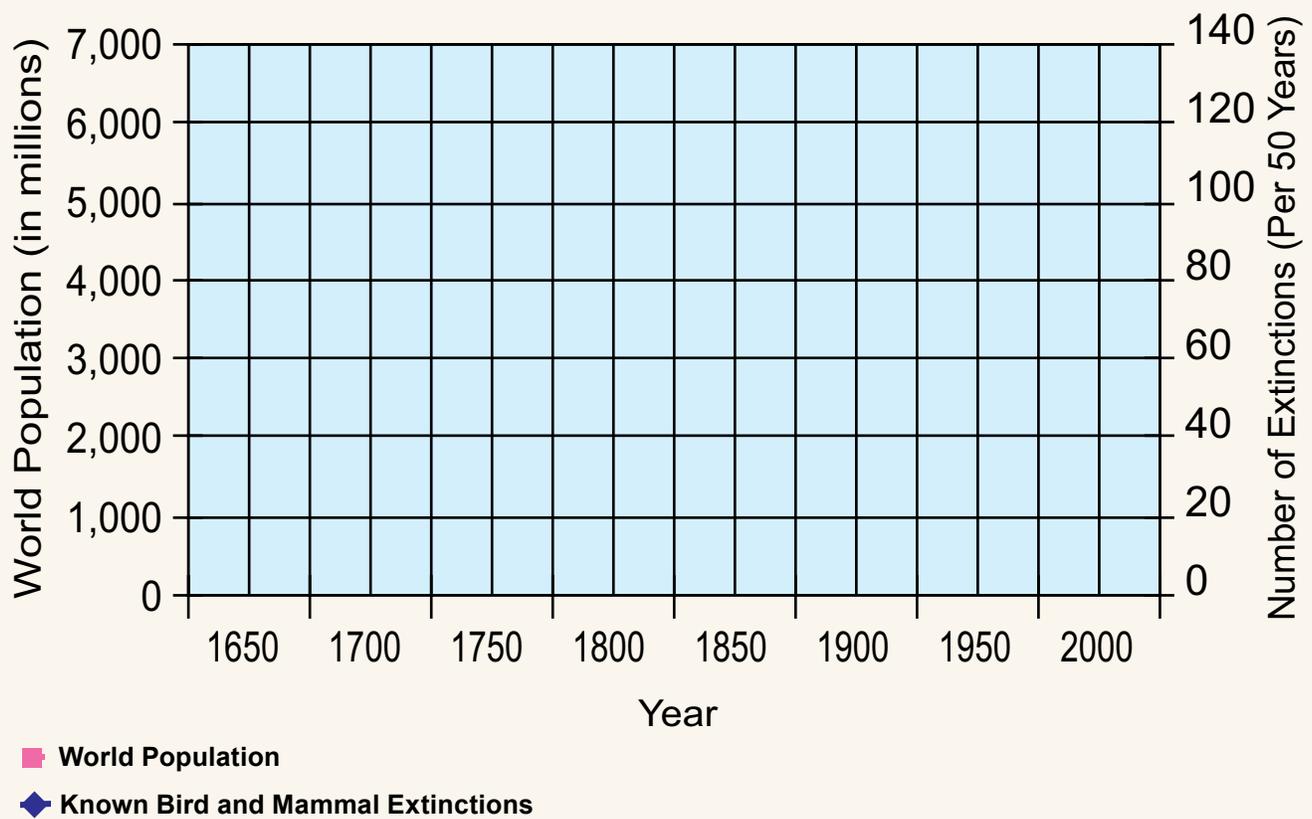
How do you think scientists count the world's human population?

How do scientists predict future population sizes?

- fertility information (birth rates)
- mortality information (death rates)
- rates of immigration (movement to the country)
- census counts (government population counts)

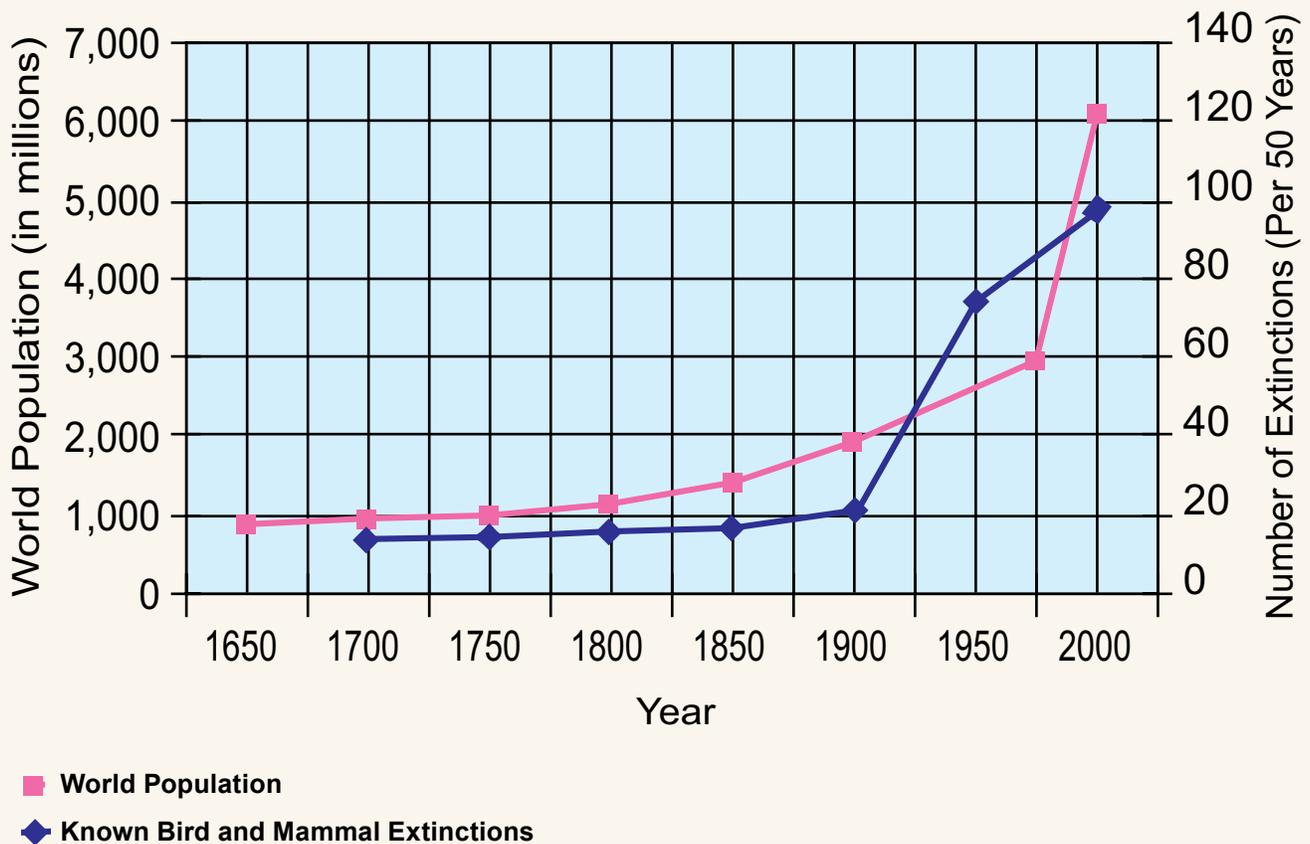
## VA #4 Graphing Population Data

### World Population and Known Bird and Mammal Extinctions Since 1650



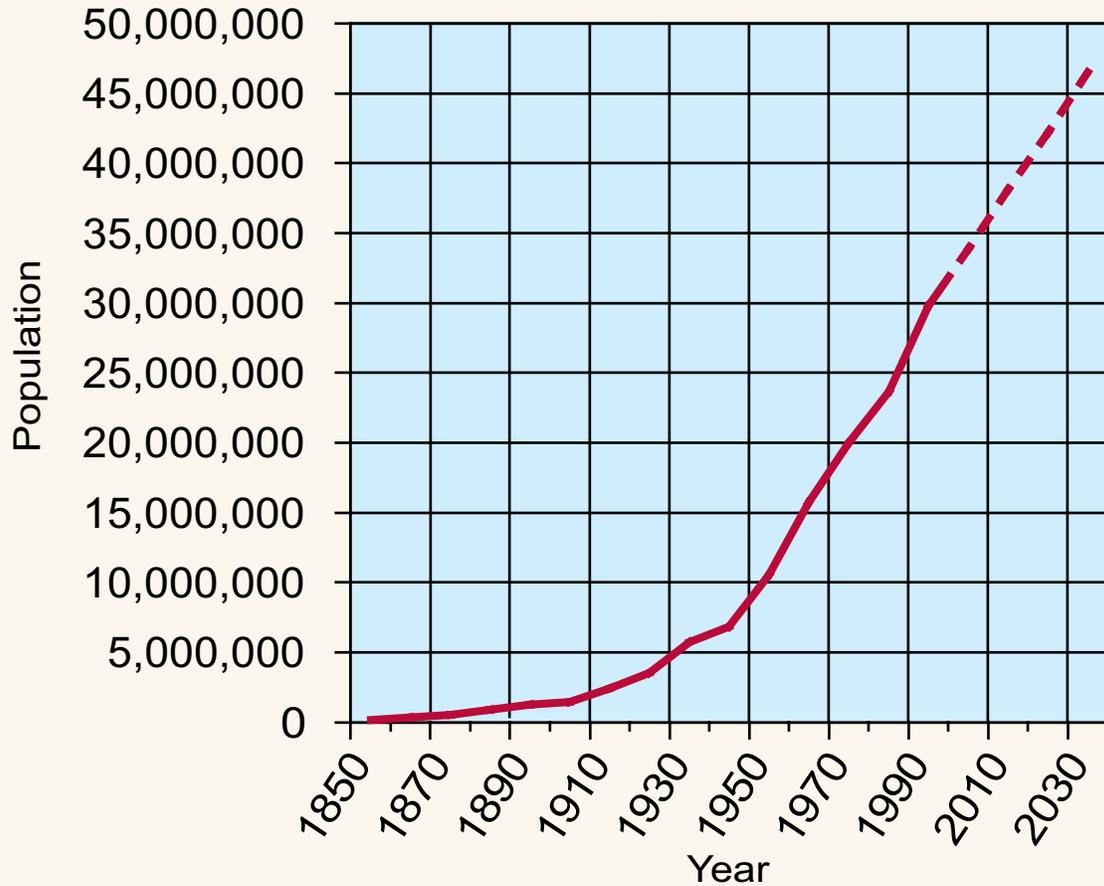
## VA #5 Graphing Population Data Answer Key

### World Population and Known Bird and Mammal Extinctions Since 1650



Source: <http://www.uwsp.edu/geo/faculty/heywood/geog358/endanger.htm>

## VA #6 California Population Graph

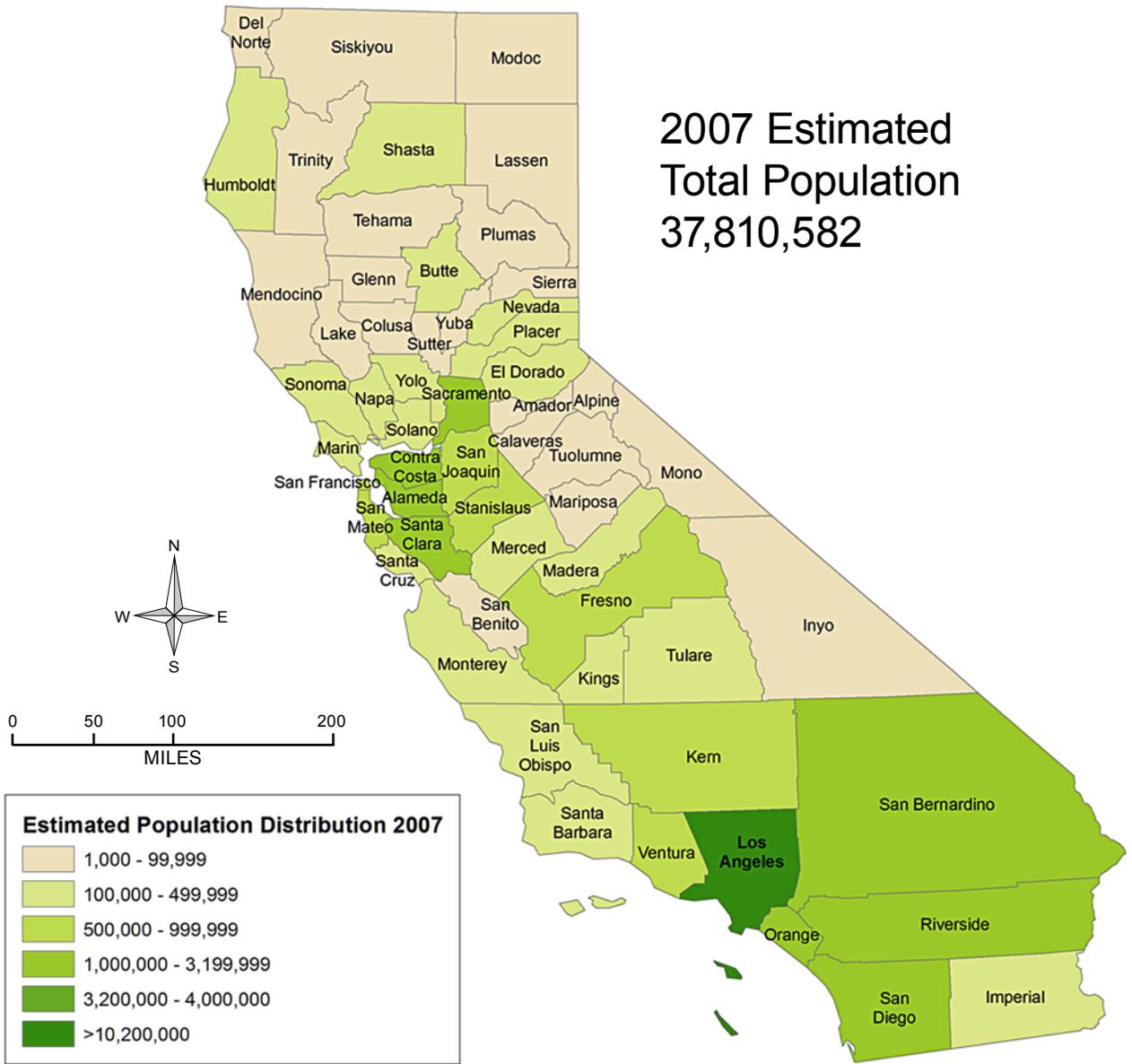


Year	Population	Year	Population	Year	Population
1850	92,597	1920	3,426,861	1990	29,760,021
1860	379,994	1930	5,677,251	2000	33,871,648
1870	560,247	1940	6,907,387	2010	38,067,134
1880	864,694	1950	10,586,223	2020	42,206,743
1890	1,213,398	1960	15,717,204	2030	46,444,861
1900	1,485,053	1970	19,971,069		
1910	2,377,549	1980	23,667,764		

Source: U.S. Census Bureau

VA #7 California Population

2007 Estimated  
Total Population  
37,810,582



**VA #8 Coastal Dunes**

## VA #9 High Desert



VA #10 Kelp Forest



## VA #11 Survey Questions

**For each statement, hold up one finger if you think the statement is true and two fingers if you think it is false.**

1. Ecosystems never change . . . . . True? False?
2. When a species cannot adapt to environmental changes, it becomes extinct . . . . . True? False?
3. Human activities always cause animal populations to decrease . . . . . True? False?
4. Extinction has happened since the beginning of all life . . . . . True? False?
5. Adaptive species can survive in any ecosystem . . . . . True? False?
6. Ecosystems where species live are always changing. Species can always adjust to natural changes, but they often cannot survive the changes caused by people . . . . . True? False?





California STATE BOARD OF  
**EDUCATION**

---

## California Education and the Environment Initiative