

## CHAPTER 9 REVIEW: ENVIRONMENT AND ADAPTATION

### LEARNING OBJECTIVES

After completion of this unit, you should be able to:

1. Define environmental archaeology
2. Describe the various methods archaeologists can use to reconstruct past environments
3. Discuss the forms of human adaptation, both biological and cultural
4. Give examples of environmental manipulation by past cultures
5. Be familiar with the various theories concerning domestication and the agricultural revolution.

### CHAPTER SUMMARY

- I. Diary Entry from Catalhouok: discussion of development of plant and animal domestication in relation to human adaptation to environment
- II. The Environment
  - A. Definition of environment; palaeoenvironment is the environment of the past
    1. ecozones, ecotones, habitat, niche, resources, carrying capacity
- III. Environmental Archaeology
  - A. Example: Easter Island's Ecological Disaster
  - B. Reconstructing past landforms
    1. geomorphology/geoarchaeology
  - C. Reconstructing past plants and animals
    1. vegetation reconstruction using pollen, phytoliths, macrofossils
  - D. Reconstructing past climate
    1. palaeoclimate reconstruction using cores, archaeological data
- IV. Human Biological Adaptation
  - A. Physiological adaptations are short term; anatomical adaptations are long-term and genetic
  - B. Evolutionary ecology
    1. studying efficiency of diet
  - C. Optimization models
  - D. Example: Using the Diet Breadth Optimization Model
- V. Human Cultural Adaptation
  - A. Example of Hohokam of Sonora, irrigation system in response to sporadic Rainfall
  - B. Example: Island geography and subsistence practices in Polynesia
  - C. Controlling the environment
    1. environmental manipulation, resource management,
- VI. Domestication and the agricultural revolution
  - A. Example: Detecting Animal Domestication
  - B. Theories of the rise of domestication: oasis, "hilly flanks," marginal environment, food crisis, scheduling changes
- VII. Chapter Summary

## **KEY TERMS:**

- **Agricultural Revolution** A general description of the development of domestication and the shift from hunting and gathering to agriculture.
- **Carrying Capacity** A measure of the maximum number of individuals of a particular species that can be supported within a specific place for a specific time.
- **Cultural Ecology** The study of the cultural aspects of human interaction with the environment.
- **Diet** The long-term patterns and trends of foods that are and are not eaten, how and when foods are obtained and processed, their nutritional value, their overall role in the diet, and how those patterns change over time.
- **Domestication** A process by which organisms or landscapes are “controlled”. In agriculture, domestication means that the genetic makeup of an organism is purposefully altered by humans to their advantage.
- **Ecosystem** An area where the abiotic and biotic components are tied together in a system.
- **Ecotone** The intersection of, and transition between, two ecozones, usually a more productive place than in either of the ecozones.
- **Ecozone** An area defined by biotic communities or geographic criteria.
- **Environment** Living (biotic) and nonliving (abiotic) systems interacting within a bounded geographic unit.
- **Food Crisis Theory** A theory of the development of agriculture that suggests that the loss of many species at the end of the Pleistocene created a food crisis, forcing people to depend more heavily on remaining species and eventually leading to domestication and agriculture.
- **Geoarchaeology** The study of the relationship between geology and geological processes and  
• archaeological interpretation.
- **Geomorphology** The study of landforms and how they change over time.
- **Hilly Flanks Theory** A theory of the development of agriculture that suggests that people began to exploit the native grasses, such as wheat and barley, that thrived along the hilly flanks of the Tigris-Euphrates River Valley, eventually domesticating them.
- **Oasis Theory** A theory of the development of agriculture that suggests that at the end of the Pleistocene, the environment changed, forcing people into close association with certain plants and animals, leading to domestication and agriculture.
- **Optimization Model** A model based on the premise that people will attempt to maximize their net efficiency and minimize their risk.
- **Paleoclimate** Past climate, the long-term average of weather, including temperature and precipitation.
- **Paleoenvironment** The study of the environment of the prehistoric past.