AP Environmental Science Exam Prep Session: Population

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AP Environmental Science Topic Outline

III. Population (10–15%)
  A. Population Biology Concepts
    (Population ecology; carrying capacity; reproductive strategies; survivorship)
  B. Human Population
    1. Human population dynamics
      (Historical population sizes; distribution; fertility rates; growth rates and doubling times; demographic transition; age-structure diagrams)
    2. Population size
      (Strategies for sustainability; case studies; national policies)
    3. Impacts of population growth
      (Hunger; disease; economic effects; resource use; habitat destruction)

Important Terms

Carrying Capacity: the number of individuals that can be sustained in an area.

r-strategist: reproductive strategy in which organisms reproduce early, bear many small, unprotected offspring (ex. insects, mice).

K-strategist: reproductive strategy in which organisms reproduce late, bear few, cared for offspring (ex. humans, elephants).

Natural Selection: organisms that possess favorable adaptations pass them onto the next generation.

Thomas Malthus: "human population cannot continue to increase. Consequences will be war, famine & pestilence (disease)."

Doubling Time: (rule of 70) doubling time equals 70 divided by percent growth rate. (ex. a population growing at 5% annually doubles in $70 \div 5 = 14$ years)

Replacement Level Fertility: the number of children a couple must have to replace themselves (averages 2.1 in more developed nations, 2.7 in less developed nations).

World Population: a little over 6 billion. Demographic Transition Model:

Preindustrial stage: birth & death rates high, population grows slowly, infant mortality high.

Transitional stage: death rate (infant mortality) lower, birth rates remain high, better health care, population grows fast.

Industrial stage: decline in birth rate, population growth slows.

Postindustrial stage: low birth & death rates.

Age Structure Diagrams: broad base → rapid growth; narrow base → negative growth; uniform shape → zero growth Most Populous Nations: (1) China; (2) India; (3) U.S.; (4) Indonesia

Low Status of Women: Most important factor keeping population growth rates high.

Methods to Decrease Birth Rates: family planning, contraception, economic rewards & penalties.