

1. Please read the following 4 paragraphs **carefully** and translate those into Chinese. (30 points) Then, answer the question at end. (20 points)

"Although some species may be now increasing, more or less rapidly, in numbers, all cannot do so, for the world would not hold them." -- Charles Darwin "On the Origin of Species"

No work has had more influence on the science of biology than the one quoted above, but there are two works, which predicted the impact of human population on the biodiversity of the earth, that stand out in the history of population biology. In 1798 Thomas Malthus wrote An Essay on the Principle of Population and one hundred seventy years later Paul Ehrlich wrote The Population Bomb. Malthus had a profound influence on Darwin and Ehrlich has been the voice of reason in the quest for human population control. Both men were correct in their predictions (though not in the exact timing of them) but were initially thought of by the general public and the media as false prophets. We know now that their warnings were well-founded and should be heeded.

Most of the scientific evidence collected since Malthus has supported his theory that even the slowest growing species would cover the earth in a short time if its population growth were unrestrained. War, famine and disease have been minor checks on the growth of human population and indeed are usually indications of areas of overpopulation. Most of the current "problems" on the earth are caused by density-dependent factors related to human population. When the population of an area exceeds the carrying capacity of the land, something has to give. Either one group kills off another (Bosnia, Middle East, Uganda), disease kills off some of the population (AIDS, cholera, malaria) or there is insufficient food and some of the population starves (Central Africa, Afghanistan). Ehrlich's theory is that either humans must voluntarily control their numbers or nature will definitely control them (through mechanisms that are very unpleasant for humans).

The exponential growth of the human population, making humans the dominant species on the planet, is having a grave impact on biodiversity. This destruction of species by humans will eventually lead to a destruction of the human species through natural selection. While human beings have had an effect for the last 50,000 years, it has only been since the industrial revolution that the impact has been global rather than regional. (By Edward J. Otten, MD)

Question: When you have read the article, you may understand that the global impact is taking place through five primary processes, please state what are they and describe them appropriately?

2. Describe following ecological and ecology-related terminologies: (50 points)

- (1) Coral bleaching
- (2) Pioneer species
- (3) Keystone species
- (4) Indicator species
- (5) Threatened species
- (6) Specialist species
- (7) Endangered species
- (8) Renewable resource
- (9) Natural selection
- (10) Ecological succession

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