

Biology/Geology 350
Invertebrate Paleontology: The History of Life on Earth
Exam Number One

Remember, this is only the essay portion of the test, and although you are to *prepare* answers to all questions provided, you will answer only one or perhaps two for the test. Which one or two you will not know until the time you take the test. Also, you may have a choice.

QUESTION FIVE
THE GAIA THEORY AND DAISYWORLD MODELS

In preparing for this question you may use any sources you wish, lecture notes, lecture notebook, and the links on the course web page (see Gaia Theory - page of links). Some of the web links are excellent summaries of the Gaia theory

- (A) Write a treatise describing completely and unambiguously to an intelligent but uninformed layperson what the Gaia Theory is and says. Be sure to include, in addition to any other topics you discuss, the following:
- ☺ Discussion of where the Gaia Theory fits into the Internalist/Environmentalist eternal metaphors debates.
 - ☺ Some examples of the Gaia effects Lovelock (and Margulis) describe.
 - ☺ Discussion of the criticisms brought against the Theory.
- (B) Describe what a Daisyworld model is and how they are related to chaos and genetic algorithm principles.
- (C) Given with the test question the unlabeled Daisyworld models we discussed in class, present a sequence of arguments explaining the meaning, significance and implication of each model for dealing with criticism directed at the Gaia Theory, and for understanding the dynamics of ecosystems.