PUTTING OUR SCIENCE TO WORK IN THE 21ST CENTURY: NEW DIRECTIONS IN APPLIED PALEOBIOLOGY?

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The scientific community is in great need of input from paleontologists today in two key areas of societal concern: the historical basis of global change and losses of biodiversity. Paleontologists, with their unique perspective on rates of change in biotic communities and their training in filtering signal from noise in the fossil record, are the best placed scientists in biology to approach these problems from an historical viewpoint. In the classroom we give lip service to the central role of paleontology in understanding these problems. Yet with the exclusion of Quaternary (and particularly Recent) paleoecology from the mainstream of our field, we have abrogated this responsibility to other disciplines. Paleontologists are in danger of losing the opportunity to provide guidance on the very issues **in paleontology** where political interest and funding will lie in the not too distant future. As opportunities for employment of paleontologists in the petroleum industry fade, it is critical that academic paleontologists define new directions for graduate education in our field.

The paleontological community needs to reincorporate Quaternary paleoecology into its mainstream, emphasizing the importance of a paleobiological perspective in environmental problem solving. As the developers of theory and methodology in the interpretation of the fossil record it is our responsibility to set the agenda as to how paleobiology should be utilized. Our professional societies should provide leadership as advocates for funding research and training in the new areas of applied paleobiology, lest paleobiology (as **we** define it) be marginalized and traditional paleontology programs be viewed by their home institutions as increasingly irrelevant. Employment opportunities in biostratigraphy are a thing of the past; applied paleontology must redefine itself for career opportunities **at the top of the column**, in such areas as recent climate change or the fossil record of human-induced ecological disturbances. The PIRLA Project (Paleoecological Investigation of Recent Lake Acidification) provides an excellent example of applying paleobiology to such problems, using the Recent diatoms, crustaceans, insects and pollen fossils to understand the chronology of the acid rain problem in eastern North America.

Academic departments bear a responsibility to bring the important new applications of paleobiology into the classroom, demonstrating its societal relevance and training students to avail themselves of potential opportunities for paleobiologists in global change and biodiversity research. Recent developments in taphonomy or stratigraphic ordering of fossils could be extremely powerful tools if applied to environmental change problem solving. We need to make our students marketable by spending more time in the classroom teaching them about Recent diatom paleoecology and less on brachiopod biostratigraphy. Otherwise paleobiology may go the way of Egyptology.