

fronted by man. This is not to say the ecologist, trained and interested in the fundamentals of the science, will not take an interest in the environmental problems of man. Indeed, he will. It does not say the environmental engineer will not learn something of the fundamentals of ecology. Indeed, he should and will. It merely emphasizes that the science of ecology and the problems of environment are so complex that it is entirely unreasonable to expect too few to do much with too little. We have run out of time and as a nation of great technology and scientific achievement we can and must correct the situation. To expect the professional ecologist to have done otherwise in the past or to expect a solution to come without a strong impetus and directive from national policy is unreasonable. The following recommendations are made as some of the possible means to correct the situation and the trends.

1. Vigorous support of basic training and of research programs in ecology. One to three ecologists per major university are far too few. Ten to twenty ecologists might be reasonable per university.

2. Emphasis on theoretical ecology as a challenging intellectual discipline which will attract theoretical physicists and chemists and applied mathematicians to the fold; but it is axiomatic that they must understand biology just as the astrophysicist is trained in physics and understands astronomy.

3. Establishment and support of ecological research centers which emphasize an understanding of specific ecosystems.

4. Training of applied ecologists to be known as environmental engineers with the same kind of relationship to ecology that engineers have to physics.

5. Recording and understanding the natural history of the planet Earth before it is too late. Complete documentation of all ecosystems must be done. This cannot wait for another generation or two or we will never know what the relatively undisturbed biota of many parts of the world were like. It is nearly too late now to understand many regions in their undisturbed state. It is also important to continue to record and understand various ecosystems throughout all stages of disturbance and change.

6. Preservation of the plants and animals of the world in the large systematics collections of the museums and herbaria. These great natural history collections contain the voucher specimens of the diverse flora and fauna of the world as evolution brought them into the twentieth century. It is primarily by use of the systematics collections that the biologist can understand the threads of evolution. Systematics collections are the bench marks of natural history and indeed the cornerstones of biology. The great systematics collections must be treated as one of our most precious commodities, yet they have been seriously abused and disregarded. They must be supported well.

7. Preservation against all encroachment of certain natural areas for future study and collecting. These areas should include representation of basic ecosystems such as rivers, lakes, ponds, forests, sand dunes, estuaries, prairies, tundras, etc. It should be self evident that we should not be the last generation to have available for study relatively undisturbed ecosystems. Future generations should have the