

flow, nutrient cycling, food webs, species diversity, vegetation structure, species associations, stages of succession, etc. It is evident from all of these that ecosystems as wholes are remarkably persistent organizations, even though they may undergo strong fluctuations or permanent changes in species composition. Although these studies document what is going on in ecosystems, they tell us little of how and why ecosystems operate as they do. Furthermore, it is difficult to find any basis for relating energy flow to species diversity, or nutrient cycling to vegetational structure, etc. The different views of ecosystems tend to remain as studies of unrelatable parts of the whole.

These different aspects must be intimately interrelated, since they are but different views of the same whole. The challenge that remains is to discern the whole (especially the how and why of ecosystems). In part this will require putting enough pieces of the same ecosystems together, so that the wholes become evident and the remaining pieces discovered. In part, also, this will require imagination and luck in the development of ecosystem theory that can guide the direction of research. It is this challenge that makes the PF-PT program attractive.

A further description of the work to be done, beyond that given in the PF-PT report, is difficult to make. On February 17-19, the two subcommittees will discuss in detail the criteria to be used for the selection of major sites. Following this, we intend to begin at once on the solicitation of nominations for sites. As soon as any sites are selected, we will begin work on their development. At that point we will be ready to start the major research programs, and help to plan contributory studies.

We plan to have, eventually, several hundred investigators participating in this program. Their projects should, in the aggregate, cost several millions annually. Additionally, such intensive study center, when fully developed, will have cost over one million in development, and several hundred thousands per year for operation. All of this money is to be sought on a normal competitive basis from whatever sources are available. It represents a major diversion of such funds, a shift that will be possible only if many of the most able ecologists wish to participate. For this to happen, the goals of the program must be deemed worthwhile, challenging, and realistic. The advantages of collaborative research, in which data become mutually useful, are a major persuasion for the program.

Perhaps more important, however, will be the hope of reaching new levels of insight, inspiration, or creativity, through the (often turbulent) interaction of minds with different backgrounds wrestling with similar problems.

Vitality of the program depends upon the immediate establishment of the central Task Force as an agency of design and development. This in turn requires the full-time effort of at least one qualified ecologist, which is the Program Coordinator in this program.

FACILITIES

The School of Natural Resources offers adequate space for the work and staff proposed in this proposal. All of the regular services will be supplied. The computer facilities of the University are available on a cost basis. The School now has its own card punch machine, and will soon have a remote entry console (the new computer is in the process of installation).

PERSONNEL

The Principal Investigator of this proposal will be the Program Director of the PF-PT program. In his own work he is intensely involved in ecosystem analysis, beginning with the analysis of models in computers. A progress report attached to this proposal summarizes the first half-year of work with support from NSF Grant GB-5306.

The Research Associate of this proposal will be the Program Coordinator of the PF-PT program. We are fortunate in having a man of exceptional ability and experience for this position, and also one whose training complements that of the Principal Investigator. Not only does a largely terrestrial, botanical training contrast well with an aquatic, zoological one, but experience in agency work contrasts well with that of academe. As can be seen from his publications, the Research Associate also has strong interests in the ecosystem-level of study, and considerable experience with some of the newer techniques of large-scale study.

Since the Program Coordinator will be full-time on this project, while the Director is at best half-time, the qualifications of the Coordinator are probably