

ANALYSIS OF DRAINAGE BASINS AND LANDSCAPES

(Submitted by Frederick E. Smith, Department of Wildlife and Fisheries)

SUMMARY

Three years of support are requested for the development and operation of overall research designs and coordination of research effort in a portion of the International Biological Program sponsored by the United States National Committee. The terrestrial (PT) and freshwater (PF) productivity subcommittees have jointly proposed the study of large ecosystems such as whole drainage basins and landscapes. Six major studies are suggested for each of six biomes, together with an unspecified number of contributory studies of smaller scope. The goal is to elucidate the operation of such systems: the dynamics of interchange among all components, the mechanisms of homeostasis, the capacity to change, and the levels of productivity sustained under a variety of natural and disturbed conditions. The major studies will permit the synthesis of information to the system level, while the contributory studies will offer comparative data and broaden the scope of application of the results.

Success depends upon the coordinated efforts of investigators from many disciplines, and upon meaningful collaboration among them. For these reasons, the subcommittees propose a Task Force including a Program Director, a Program Coordinator, a secretary, and the members of the PT and PF subcommittees. This group will work intensively on the design and development of system-level research, including the promotion and coordination of collaborative projects. The assignment is intended to accelerate the development of ecosystem analysis, an approach that is currently developing in several research centers, but too slowly to provide the understanding of ecosystems that is needed today.

The bulk of support for this program will be sought separately by agencies sponsoring sites, and by investigators wishing to participate. The major costs of administration will be included in such requests. This request covers only the efforts of the Task Force. At least three years are needed before an effective evaluation of this approach can be made.

The body of this proposal is a report prepared October, 1966, by the PF and PT subcommittees of the United States National Committee, I.B.P., together with additional invited ecologists. Since other subcommittees were meeting at the same time, attendance varied from day to day. The following is this observer's list of participants:

- *Lawrence Bliss, University of Illinois
- Frederick Bormann, Yale University
- Joseph Connell, University of California at S. B.
- Charles Cooper, University of Michigan
- Rexford Daubenmire, Washington State University
- *Shelby Gerking, Indiana University
- *Charles Goldman, University of California at Davis
- *Arthur Hasler, University of Wisconsin
- *Philip Johnson, Department of the Army
- Gerald Marten, IBP of Canada
- *Eugene Odum, University of Georgia
- *Jerry Olson, Oak Ridge National Laboratory
- Oscar Paris, University of California at Berkeley
- *Frank Pitelka, University of California at Berkeley
- *Ralph Silliman, Fish and Wildlife Service
- *Lawrence Slobodkin, University of Michigan
- *Frederick Smith, University of Michigan
- Forest Stearns, Institute of Forest Genetics
- *George Van Dyne, Colorado State University
- *Richard Whittaker, University of California at Irvine
- John Wolfe, Atomic Energy Commission
- George Woodwell, Brookhaven National Laboratory
- John Wright, Montana State University
- Frederick Wagner, University of Utah

*Indicates members of the subcommittees.