

answer calls for surveying and mapping, in quantitative terms, entire distributions of species at all life stages, along with significant properties of the environment. This necessitates simultaneous, systematic collections of data and material at frequent intervals to demonstrate the shapes and limits of distribution.

For scientists interested in biogeographical problems, it would be helpful to coordinate the vessel programs of the coastal laboratories so that each could concentrate its work in a relatively small sector, thus avoiding overlapping and gaps in the areas studied and providing nearly synoptic coverage. Concomitant data on temperature and salinity should be recorded to identify water masses and to determine the relationship between the distribution and the environmental characteristics.

In their efforts to describe the distribution and abundance of marine organisms, systematists and biogeographers have been hampered by inadequate support for working up and maintaining collections. Steps to correct the deficiencies are being taken, but there continues to be a need for more precise definition of marine populations by serological and other biochemical and physiological techniques, some of which involve laboratory cultures or experiments.

INTERNATIONAL COOPERATION

One of the IBP's most valuable attributes will be the comparison and synthesis of research results that arise from cooperation throughout the world. Such cooperation should be fostered by joint planning of programs and by interchange of scientific personnel for participation in research or for training. Comparability of observations should be insured by intercalibration of measurements, and by agreeing on uniform analytical and collecting techniques. Projects which by their nature will require cooperative effort will include, for example, comparison between estuaries that are unpolluted and other estuaries in heavily industrialized areas; detailed description of biotic communities on both coasts of Central America in anticipation of a sea-level canal; studies of conditions leading to red tide outbreaks and assessment of the