

persal of Biologically Significant Materials. This program is also being developed under the auspices of the IBP.

Description of studies

Intensive studies at selected sites throughout the country, will encompass detailed measurements of the environment and investigations of population structure, breeding behavior, and physiology of the organisms in addition to detailed phenologic observations.

Knowledge of the genetic variability within a species is fundamental to the selection of appropriate species for study. The program should clarify reasons for the geographic and temporal pattern of phenological events revealed by the extensive program and species studied should be chosen with this end in mind.

Individuals may wish to study intensively the phenology of a select group of organisms in one or more sites for a period of time as a part of or separate from the intensive site studies.

The extensive program will require a large number of stations and observers organized into state or regional networks. Seasonal and annual observations will require well defined scoring systems and specific individual organisms marked (in the case of plants) for observation. Species selected should be easily identified, widely distributed, readily observable with relatively simple and definable seasonal events for recording. Two kinds of networks are envisaged: (1) A North American phenological garden network which will use a combination of genetically known clonal stock and native species. Garden sites might include arboreta, nurseries, agricultural experiment stations, etc. (2) A survey network in which a greater variety of organisms would be studied. This network might be organized by state academies, teacher associations, garden clubs, arboreta, Audubon Society, state conservation departments, and federal agencies such as the Forest Service and Park Service.

Examples of phenological studies now underway include: (1) Intensive studies of selected shrubs and herbs planted at agricultural stations with detailed meteorological records. Dr. Bryon Blair of Purdue University is operating a network of 10 such stations distributed throughout Indiana. (2) Extensive studies involving a variety of events observed on native species in sites as well as ornamental and cultivated plants. The Wisconsin Phenological Society (731 University Avenue, Madison, Wisconsin) operates a network of over 300 observers. (3) Detailed regional studies involving topographic and microclimatic variation. The studies in Neotoma Valley directed by Dr. Gareth Gilbert of Ohio State University have been gathering data spanning a period of over 10 years.

The objectives of this program include: 1) preparation of *maps* which will summarize phenological events (leaf enlargement, fruit and seed production, and nest building) for species or groups of species; 2) discovery of phenological clues to the physiologic limitations which determine the *climatic limits of species*; 3) clarification, through intensive studies, of the *biological basis of phenological timing*; 4) investigation of the hypothesis that phenological studies will aid an *understanding of evolutionary mechanisms and strategies* in the taxa involved; 5) elucidation of the *role of phenology in development of community structure and productivity in ecosystems*.

Species useful for recording phenological events

As a first step in the development of the phenology program we need to select a list of species for both the intensive and extensive studies. Lists of suggested species prepared by an *ad hoc* committee at Madison, Wisconsin, April 14-16 are attached. Species were chosen on the basis of wide geographic distribution, yet rather narrow range of genetic diversity. We would appreciate your evaluation of these species and suggestions of other species which are suitable for either intensive or extensive study.

Species suggested for intensive study

Birds:

Passer domesticus—house sparrow
Progne subis—purple martin
Zenaidura macroura—mourning dove
Turdus migratorius—robin

Mammals:

Microtus spp.—meadow voles
Peromyscus spp.—white-footed mice