

acters involve physiological adaptation to the environment; others involve behavior patterns. Understanding of the process of speciation hinges on knowledge of these characters.

Two methodologies need to be applied to an understanding of population equilibria and differentiation. One is ecological population analysis and the other is analysis of physiological mechanisms of variation. The former includes study of reproductive rates and patterns, inter-organismic competition, food chains, and predation. The latter includes biochemical and physiological variations and mechanisms of feedback interaction between organisms and their environment.

There is urgent need to apply tests for both resistance and capacity adaptations to populations of animals and plants of the same or related species from different regions. In addition, behavioral variations of the same or related species must be identified. Such studies may reveal population differentiation and increase our understanding of adaptability of natural populations.

Physiological variation is of two sorts -- genotypic and environmentally induced within genetic limits. The two sorts can be separated by acclimation in nature or in the laboratory. Adaptation in the field is not necessarily the same as that in the laboratory.

Regional comparisons must be based on measurements that are accepted by workers in different locations. Measurements of stresses of temperature, salinity, specific ions, photoperiod, available oxygen, and nutrients are best known. Relevant factors should be studied in each stage of the life cycle and in each component of the population -- e.g., nutrient exploitation in young and adult, male and female, and other subdivisions.

Analyses by physiological, ecological and genetic means of populations of selected species of the following groups of animals and plants from over their entire geographic range are particularly recommended. Agreement on comparable methods should be reached in early working conferences.

1. Species of expanding range. Some of these are cosmopolitan and others are more restricted. Examples of colonizing species include: house mouse, English sparrow, starling, certain cockroaches, toads, culti-