

## SOME INFLUENCES OF MAN ON BIOTIC COMMUNITIES

BY

WILLIAM C. VAN DEVENTER

*University of Illinois, Urbana, Illinois*

### ABSTRACT

The introduction of civilization into a primitive area involves: (1) extinction of the large and slow-multiplying animals; (2) destruction of climax vegetation and much of the animal life which depends upon it; (3) spread of certain plant forms which are man-tolerant, and essentially sub-climax in nature; and (4) modifications of number-relations among the smaller animal species which are man-tolerant. Some of these smaller animals merely adjust their habits so as to survive under the new conditions, usually with reduced numbers (skunks, opossums). Some, however, are actually benefited through an increase of food or of suitable breeding places, or through the destruction of their enemies (some rodents, birds, and insects). These are enabled to increase their numbers and extend their range. At the same time civilization brings with it a very definite biota of parasites and weed forms, both plant and animal, which are able to survive and propropagate most successfully under man-influenced conditions.

Thus in areas where civilized man is well-established there are developed biotic communities of civilization which contain the following elements: (1) man, (2) domestic animals and plants, (3) man-tolerant native animals and plants, (4) imported weed forms, plant and animal, (5) parasites, native and imported. These different elements assume different degrees of relative importance according to whether we are studying (1) communities of man's dwelling and its environs; (2) communities of meadows, pastures, and cultivated fields; or (3) communities of relict woodlands and other semi-wild areas.

Conditions over a region may remain essentially primitive even though settled agriculture is practiced over certain portions of it. Such conditions persisted in Western Europe until about 1300 A. D. Up to this time great areas of forest remained uncut, and most of the larger animals were still found in them. During the period from 1300-1700 these forests were largely cut or burned, and the wild life destroyed. This period of biotic disturbance in Europe corresponds to the period from 1650-1880 in America, and from about 1820-1900 in certain parts of Australia. In all three cases the period was marked by destruction of natural conditions and wild life, and also by great increases in human population and extraordinary prevalence of epidemic disease.

Such a period gives way to one in which the destruction of natural conditions is largely completed. At the same time diseases tend to be endemic rather than epidemic. This change in the nature of their occurrence seems to be independent of any medical advance. Somewhat later, but belonging in the same train of events, the human population comes to increase much more slowly or actually reaches a level, and violent changes in the number-relations and range of animal species cease to take place. Thus the biotic community, with those elements eliminated which were not man-tolerant, and with the addition of the new elements which were brought in by civilization, strikes something like a balance.