

is to be managed, then initiates a program to monitor changes within the system, and finally develops a strategy to control the activities that impact the system. Today, landscape management pays little attention to the whole system, but rather manages the parts. The business of landscape management is divided amongst a multitude of agencies having overlapping jurisdiction, and yet many parts of the landscape are left unmanaged. A whole system approach to landscape management is needed, and the issue of cumulative impacts, is the one issue that shows this need the most.

Concepts of Cumulative Impact

There are two concepts of cumulative impact for which there are two distinct management alternatives. One concept deals with the cumulative impacts of a bit by bit development of the landscape that slowly "consumes" natural areas, turning them into developed lands. This concept might be called the cumulative loss syndrome, for it is concerned with the loss of landscape functions as a result of the loss of natural areas a bit at a time. While the first acre lost to development may not have an effect on landscape functions the cumulative impact of developing acre after acre may cause serious erosion of function.

A second concept is the cumulative effects syndrome. The various impacts of development (pollution, lowered water tables, increased runoff, dredging, filling etc.), may act synergistically to cause serious erosion of landscape function, but the loss is not necessarily correlated with the area of natural lands that is developed. Losses are more related to intensity and spatial distribution of development activity. Activities of high intensity effect wider areas of the surrounding landscape than those of low intensity, and the effects of a wide distribution of activities may have greater spatial effect than those concentrated in a single area.

The end results of both syndromes are much the same; a net loss of landscape functions. However the mechanisms of each are very different and the symptoms of each are not equally monitored. Cumulative loss of natural areas is easily tabulated by simply measuring areas acre by acre as they are developed, and projections based on past rates of conversion