purification, where watersheds are left intact, where waters are recycled and conserved, where the interconnections between uplands and estuaries are recognized, and where humanity lives in a balanced economy of nature and society.

Whole Systems Approach

Understanding the whole landscape as one system may be a method of beginning to solve some of the complex problems that face decision makers, managers, and regulators. A whole systems approach sees the landscape of uplands and estuaries as one interconnected system, and the development of inland areas as directly affecting the health and well-being of the coastal estuary.

To understand any component of a landscape, such as the estuary, one must first look to the larger system in which it is embedded, and the driving forces that shape and sustain it. For like all of nature, the landscape is organized as systems within systems. The estuary is a marine system embedded within a much larger marine environment, interfacing with the terrestrial environment and driven by forces generated at the global scale. From the seaward side come the forces of waves, winds, and tides that shape barrier islands, carve inlets and flush the estuary. From the landward side come runoff waters from abundant rainfall, carrying nutrients and organic matter that sustain long pyramidal food chains. From above, sunlight penetrates the clear waters providing the energy for photosynthesis of the abundant plant life.

In all, the estuary can be thought of as the interface of land and water, where the energies and materials of the landscape are concentrated and where the energies of the sea are dissipated. It is at this interface that marine productivity is highest and the attraction for humanity to congregate is greatest, and where the delicate balance of inputs from the land and inputs from the sea is easily disrupted....where changes in the quantities of water, nutrients, or organic matter, or changes in flushing by tidal action can cause major changes in the structure of the estuary.

THE INDIAN RIVER BASIN

Physical Features

Shown in figure 1 is a map of the watershed of the Indian river system as detailed by Conover and Leach (1975). The total area of the drainage basin is given by Hughes (1978) as 3605 km^2. Average elevation and highest elevation are about 8 and 27 meters above MSL respectively. The basin stretches approximately 134 kilometers from the Ponce de Leon Inlet on the north to the St. Lucie Inlet at its southern extreme. At its widest point near the Brevard/ Indian River County line, the basin is about 27 kilometers (measured from the Indian River inland). For much of its length the basin averages less than 3 kilometer in width.

Historically, the watershed for the Indian River was probably much narrower in the area of central Indian River and southern Brevard counties,