

“ Why use GIS in Natural Resources?: edited by Michael Heit and Art Shorttreid.

GIS Applications in Natural Resources.

Article named: Where is the Technology Leading Us? by Jack Dangermond. p.11

GIS technology has been affiliated the management and mapping of natural resources, as well as forests, since the beginning of its use about twenty-five years ago. Canada was one of the first countries in the world to put to use a large GIS for the management of natural resources along with other purposes. The area of forest management and forestry illustrate very well how GIS technology have been put to use to manage natural resources.

GIS techniques create maps that are the same or superior to those which are produced by manual methods. This fact is evident by the large number of governmental and commercial cartographic organizations that are moving over to GIS approaches to map production. In addition to conventional maps the manufacture of different types of thematic maps to try to clear up a user's understanding of the natural resource situation with which they must act. Reports and statistics produced from GIS are meaningful as well for monitoring and management.

GIS software is used to investigate natural resources issues. Organizations, starting with elementary models and simulations, over time and with the aid of basic scientific research and better understanding are producing more complex and dependable models. Some of the models just automate the calculation of timber yields, site landuse such as haul roads or recreational facilities, aid in choosing timber for harvest or conservation, identify sensitive habitat for preservation, or manage a timber stand.

More complex and powerful applications combining modeling with GIS keep emerging. These more sophisticated models seek to predict where forest fires might start and how they are best extinguished, what effect acid precipitation and other environmental affronts will have on forests, and how quickly specific wooded areas will become desert. Process models, which are aspatial, (not map-based) are being united with GIS systems to address the major questions of how economic, meteorologic, hydrologic, and other processes interact with geographically disposed natural resources. When joined with database management system technology and miscellaneous data gathering procedures, GIS technology makes it a great deal easier to produce and preserve extensive information about natural resources.

Thus, many issues, which previously were not approached systematically since the data were too costly to accumulate or the analysis took too much time, can now be addressed explicitly. Instead of needing to identify, fund, and staff a special study for every new problem, the existence of GIS means it is easier to deal with unique problems through query and reporting efforts not very different from other kinds of routine management operations.

There are a number of cases of the interaction between GIS technology and other current technologies. Examples are: the joining of GIS technology with special systems (that are based on standards of artificial intelligence), the utilization of global position

system (GPS) technology to strengthen data capture for GIS systems, the employment of image processing to allow for more rapid updating of GIS databases.

What is still yet to be found, in this area of GIS application as well as in others, is the magnitude to which GIS technology can do more than simply help arrange and rationalize policy making, decision making and management, meaningful as that would be if it were achieved. What is still yet to be found, and what is potentially most significant about GIS technology, is whether GIS technology can contribute to the solution of the problems which have been sketched out above. To put it briefly, whether GIS technology can make a difference in natural resource management, if that difference is measured by profits, healthier forests, conservation, habitat rehabilitation, or some other way.