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## A GIS-based approach for information management in ecotourism region

Guan Hai-ling<sup>ab\*</sup>, Wu Liang-qiang<sup>b</sup>, Luo yong-peng<sup>ba\*</sup>

<sup>a</sup>Beijing Forestry University, Beijing, 100083, P.R.China

<sup>b</sup>Taiyuan University of Science and Technology, Taiyuan, 030024, P.R.China

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### Abstract

Along with the rapid development of computer multimedia technology and communication network technique, Geographical Information System (GIS) has been applied widely. A GIS-based approach was designed to spatially estimate direct use value of ecosystem services. The approach highlights the use of GIS to collect data, perform spatial analysis, and map economic values; the unique spatial database technology in GIS can combine the figure information which reflects the geographical position together with various kinds of information. At the same time, the functions of GIS in the development and management of tourism and the development and perfection in geography have been analyzed.

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*Keywords:* ecotourism; ecological sensitivity; GIS

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### 1. Introduction

With the rapid development of computer multimedia technology and communication network technique, Geographical Information System (GIS) has been applied widely and developed rapidly during practice of society development in the 1990s. The approach highlights the use of GIS to collect data, perform spatial analysis, and map economic values; the unique spatial database technology in GIS can combine the figure information which reflects the geographical position together with various kinds of information. A GIS-based approach can establish various types of application model and process the data,

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*E-mail address:* [tyghl03@163.com](mailto:tyghl03@163.com). Tel:+8613994299616

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and then obtain the results according to the user's need, which may provide support for making decisions for all levels of government and the business management department.

Ecotourism was first put forward by the Hetor Ceballos Lascurain in 1983<sup>[1]</sup>. It is usually considered to be more than just nature-based tourism. The World Conservation Union's Commission defined it as "environmentally responsible travel and visitation to relatively undisturbed natural areas that promotes conservation, has low visitor negative impact and provides for beneficially active socio-economic involvement of local populations" (Ceballos-Lascurain,1996)<sup>[2]</sup>. With the rapid development of ecotourism, it cannot meet the multiple layer demands for user on methods through particular investigation, analytical study, the planning and management of the traditional tourism resources in recent years. So, it is necessary to introduce advanced technology of GIS. This paper presents a GIS-based approach application for information management in ecotourism region, GIS has such a great spatial analysis functions, that it can produce lots of graphic feature, meanwhile, GIS will not only offer visitors with a useful tool to facilitate their activity planning but also increase their activity planning but also increase their satisfaction from the matched personal interests and tourism resources.

## 2. A GIS-based approach in tourism resources application research

The growing interest in ecotourism studies will be able to benefit from the GIS technology by developing more useful and efficient applications. Roger Tomlinson first coined the term of GIS in 1963 when he was in charge of the national natural resource inventory for Canada. GIS can be used to determine the best sites for a new tourist destination while trying to maintain a sustainable natural area in the presence of tourism (Butler, 1993). Boyd et al. (1994) used GIS to help identify the areas for ecotourism in northern Ontario. There also have been studies of GIS applications in tourism planning (Savitsky et al., 1999; Mejia et al., 2000) and on delivering tourism information via the Internet (Du and Gabay, 2002). UK Banerjee, Smriti Kumari, SKPaul, S. Sudhakar (2002) used RS and GIS technology to identify potential areas suitable for ecotourism, thus developed the ecotourism planning based on natural resources of the region in Africa<sup>[3]</sup>. Osborn and Parker (2003) used GIS technology to plan the protection access of wild elephants and tourism channel in the Zambia public land. Sarda and Avila (2005) took Catalonia, north of Spain, for example, discussed the Coast regional tourism policy model<sup>[4]</sup>. Katsue Fukamachi, Hirokazu Oku and Tohru Nakashizuka (2001) compared the spatial characteristics, land use types and differences of each land unit of the landscape of Satoyama in 1975-1995 by using GIS, and concluded the natural and artificial factors, changes in land type, regional changes in these districts' enter conditions, and changes in terrain, in addition to change of ownership of the land<sup>[5]</sup>.

Jin Lifang, Liu Xueping (1997) compiled general plan maps, landscape character maps, greenery planning and design, land use planning map and other tourism resources development plans based on GIS in Xianju Scenic Area in Zhejiang<sup>[6]</sup> which is the application of GIS technology in ecotourism planning. Yan Hanbing (1999) taking Zhejiang Province and Hangzhou City for an example, introduced tourist map creation methods and processes<sup>[7]</sup>. Zhong Linsheng and Xiao Duning (2002) took Ussuri River National Forest Park as an example, the use of GIS technology, calculate the suitability of eco-tourism Park, at last put forward some suggestions to the different fitness of park<sup>[8]</sup>. Yin Yi-Mei, Liu Zhenghao et al (2003) focused on establishment and operation process of environmental monitoring of ecotourism, using GPS, GIS data integration, the establishment of tourism to environmental information system for analysis to find and solve the problem<sup>[9]</sup>.

These are some GIS application at home and abroad in ecotourism. It make ecotourism more accurate data in investigation, planning, and environmental protection and sustainable development by using GIS, which can make a more practical plan to guide program implementation. However, due to the current GIS

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