INTRODUCTION

In the world’s society today, tourism has been growth as a big business and huge industry. The Center of Responsible Travel noted that in 2011, the international transaction on tourism activities reach US$ 1 trillion (CREST, 2015). In 2005, the number of international tourist arrivals was exceeded 800 million and predicted will continuously growth and reach 1.56 billion international arrivals in 2020 (TIES, 2006). Tourism is closely related to personal leisure of each individual and every people their own way and passion to spend their leisure. However, as many other human activities in this modern world, tourism also bring many impacts, and ecotourism considered can avoid most of these impacts as ecologically and socioeconomically most viable approach (Gossling, 2000). Basically, a tourism activity can be recognized as an ecotourism if it has three main idea of ecotourism on it, as nature based, environmentally educated, and sustainably managed tourism activity (Blamey, 2011). Although there are a lot of argumentation about the boundary of how far a tourism activity can be defined as ecotourism, ecotourism still can be a good way to manage the environment sustainability and to increase the prosperity of local community at the same time. The International Ecotourism Society agreed that ecotourism defined as “Responsible travel to natural areas that conserves the environment and improves the welfare of local people” (TIES, 2015 www.ecotourism.org).

However, in many cases some research proven that ecotourism not always beneficial for local communities and the environment, this activity also considered to bring some side effects to its surrounding. Since more government and private sectors interested to invest their money on this promising business, the massive, uncontrolled, and unplanned development of ecotourism also responsible to the environmental degradations, negative interaction between tourists with local communities, and also huge carbon expenses from the traveling activities. The Bunaken National Park in Indonesia is an example, where the development of ecotourism did not managed properly, and shows some impacts to the coral reef ecosystem and the relationship between local communities in the area. Some research shows that the development of marine ecotourism in this area are threatening coral reef ecosystem in many ways, not only due to the unplanned infrastructures and facilities development, but also the existence of tourist are reportedly exceed the carrying capacity of the ecosystem. In addition, conflicts between local people with private sectors, local people with tourists, and also conflicts between neighboring tribes are inevitable due to so many reasons.

In order to gain deepest understanding about ecotourism, scientists from multi-disciplinary background interested to further examine this field, including anthropologist and environmentalist, in order to minimize impacts of ecotourism activities toward the society and the natural resources. Research and decision making in tourism is becoming increasingly complex since organizations and communities involved have to come to terms with the competing economic, social, and environmental demands of sustainable development (Bahaire and White, 1999). Rapid development of computer and multimedia technology and communication networking, has bring wide application to the modern world, including rapid development of the Geographical Information System (GIS).
Roger Tomlinson first coined the term of GIS in 1963 when he was in charge of the national natural resource inventory for Canada. The fundamental use of GIS is to collect data, perform spatial analysis, map economic values, and most importantly GIS can combine the figure information which reflects the geographical features together with various kind of information. The spatial environmental data of GIS has been widely used in several ecotourism related researches, and has been proved its efficiency to some ecotourism issues including explore conflicts, examine impacts, and development planning. In addition, the features of remote sensing and aerial photography also widely used in the ecotourism management, primarily to see the changes in land use/land cover, from time to time, to see the impacts of activities in the area. Furthermore, some advantages offered by GIS and remote sensing also support the effort to predict and finding the potential and safe area to be developed in the future.

Works Cited


Annotated Bibliography


Bili-Bili Dam is the most important water source for the City of Makassar, South Sulawesi, Indonesia, due to its importance to provide not only clean water for daily needs, but also water for irrigation and power. However, rapid development of ecotourism around the area, and accumulative impacts of urban development and farming, has been increase sedimentation rate in this dam. To solve this issue, the authors developed four scenarios to simulate erosion rates using GIS-Based, Interactive computer program along with some model developed using Borland Delphi and map Objects component. Input parameters for the model including: Erosivity, erodibility, slope-length, land cover, and conservation factors. Despite the fact that satellite imagery were generated to collect land-use data, it is unclear what kind of GIS Program has been used in this research. As the result, this research conclude that the
drainage basin is mostly caused by dryland agriculture where the local slope is 40%. In addition, the authors also suggested to apply terraces, strip cropping, mulch and crop rotation, along with reforestation of fallow areas and other arable land with slopes greater than 40%. Those reforestation and other crop strategies also can be used as another ecotourism attraction in the future.


Through this research Dickey and Higham try to indicate the impact of the development of urban-based ecotourism businesses in New Zealand, by building the database using ArcGIS software. This database identified businesses that claimed to deliver ecotourism activities in New Zealand, along with some information about them, including business name, contact person, address and the type of service they offered. Combination of those basic information and spatial data with some statistical analysis has been successfully highlighting some areas with critical mass of ecotourism businesses, and marked as the “key” of ecotourism business. In addition, this study also reveals the emergence of some operators in the regions associated with large metropolitan center, has been counters the view that ecotourism takes place primarily in remote areas.


Image classification of IKONOS imagery and geographic information system were used in this research to investigates the rational planning of ecotourist activities and conservation measures in Yan Chang Tou marine park in Hongkong. Recently, ecotourism has flourished and attracts ecotourists who visit the ecological and cultural resources of the rural landscape, country parks, and marine parks, that also claimed can help preserve its natural flavor and cultural heritages in the area. The authors try to identify suitable sites for recreational activities and important ecological habitats using multiple criteria evaluation (MCE) techniques. Based on either Boolean operations or weighted linear combinations, MCE can help provide results in the form of suitability maps (results of weighted linear combination) pertinent to the specific objective. As mentioned earlier, IKONOS images are used to generate a vegetation map, which is then integrated with a variety of spatial data from different sources, and can be selected for multiple criteria evaluation to identify sites for conservation and recreation. As the results, the potential campsites, snorkeling and diving spots, cultural visits, and the best hiking routes are well identified. In addition, this results can act as a guideline and support for ecotourism planning and decision making.


This study divided ecotourism activities in southern Caspian Sea, Gulam Province, Iran, into 3 zones including plain, forest, and rangeland. Hence, layers overlays in ArcGIS software used to determine decentralize and centralize sites, based on slope, aspect, and without plant space, for locating the appropriate tourist settlement areas, in order to avoid the impacts of ecotourism into natural sources. The determination of suitable tourist sites have been done in 4 stages including: determining of
effective agents in query, weighting of data layers, aggregation of layers and recognizing suitable regions, and conforming of results and query of suitable region with land realities. Finally, with considering all of the indicators, tourist decentralize or centralize settlement and access road, 16 centralize sites located query in 3 regions.


This research was try to identify and prioritize the potential ecotourism sites in West District of Sikkim state in India, using analytical and hierarchical process, and geographic information system along with integrating five indicators including Wildlife Distribution Index (WDI), Ecological Value Index (EVI), Ecotourism Attractivity Index (EAI), Environmental Resiliency Index (ERI), and Ecotourism Diversity Index (EDI). Those indexes were determined by several method such as: calculation of species diversity and distribution of endemic species to determine EVI, and questionnaire distribution to find the vegetation canopy attractiveness value in the progress of determining the EAI. In addition, the authors also generating various data from delineation of satellite imagery including elevation, land-use/forest-cover, vegetation diversity, density and endemism, wildlife, tourism attraction features and infrastructure facilities, to assess and integrate the impacts, levels of dependent or independent, and qualitative or quantitative information. As the results, this comprehensive research has provide some maps which shows the level of impacts both for environment and local communities, potential sites, and potential management strategy for future development. By the end, the authors concluded that increased human interference in the ecologically fragile areas can cause irreversible change in the existing ecological processes.


This study took place in Surat Thani province, Thailand, where 49% of the area dominated by high mountain ranges along the north and south of the area. Geographical Information System along with Analytical Hierarchy Process are used as the tools to identify and prioritize the potential ecotourism sites in this study. From geographical point of view, the authors determines nine criteria to evaluate the ecotourism sites including visibility, land use/cover, reservation/protection, species diversity, elevation, slope, proximity to cultural sites, distance from roads, and settlement site. In addition, there are some important attributes that should be considered in order to develop successful ecotourism, for instance, it should be largely free from urban settlements, have rich vegetation cover and considerable wildlife, traditional indigenous people’s groups and recreational tourists attractions. All of those criteria are also supported by data collection through interviews, GPS Field survey data, and other GIS Datasets. As the results, the typical sites recommended are summarized based on 4 classes such as: highly ecotourism potential, moderately ecotourism potential, suitable for tourism development, and currently not suitable. Further, this research also suggests suitable activities that can be conducted in each criteria to maintain its sustainability and minimize the impacts.


The purpose of this study is to examine the effects of wetland expansion on land use/cover changes in southern Sri Lanka after 1980, by exploring the use of image analysis approaches in mapping wetland land use and land cover. Spatial changes in the wetland area from 1983 to 2011 were analyzed using
data collected from satellite remote sensing and GIS. The sequential aerial photographs used for the study dated in 1983 have a scale of 1:20,000 compared to the IKONOS satellite images dated from 2003 and 2011 with 4 meter resolution, provided by the Survey Department of Sri Lanka. The results of the image interpretation and classification indicate that majority of the land use changes took place after the implementation of the flood control scheme in the lower flood plain of the Nilwala river. The expansion process in Kirala Kele wetland would be useful for ecotourism development in Sri Lanka.