The Usage of GIS Systems for Selection Camps with Emphasis Ecotourism in Southern Caspian Sea

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Abstract
Ecotourism with aim of the protection of Natural resources, environment sustainable and geographic information system application, is one the most importance steps for tourism development. This study with emphasis has been accomplished by upon theory in southern Caspian Sea, 25 water catchment basin (shemrood), Guilan province. First, for ecotourism development, the study region divided to 3 zones: plain, forest and rangeland. Then by use of layers overlay determined decentralize and centralize sites, by slope, aspect and without plant space with Arc GIS software. Finally, consider the all condition, tourist decentralize and centralize settlement and access roads, the centralize site located query in 3 region.

Key words: Ecotourism, sites, GIS, overlay, water catchment, Guilan province

1 Introduction

Today, tourism as one of the world’s huge industries, with a lot of economic, cultural, social and environmental sections is related to human life in a complicated way. Many researchers believe in the independence of tourism and they define the principles of tourism based on an industrial structure. In the last two decades, ecotourism has been the center of attention for many experts, since in ecotourism traveling to original natural regions which aims at studying, and enjoyment from landscapes, wild animals, plants, etc, which had an insignificant impact on the environment and natural resources and play a role in the protection and survival of various specious of plants and natural sources. They can be introduced as a good source of income for natives with appropriate advertisement and education. Ecotourism is an antithesis for a tourism that thinks of short-time profits.

Following from the definition of Ecotourism as a kind of tourism includes a wide range of activities related to natural resources: visiting national parks and protect areas, original natural area, watching birds, going on tours in the natural environments, side climbing, mountain climbing, visiting natural caves, studying plant Flora or animal Funa, conducting field studies on animal life, ecologist considerations and similar ones.

Abdus slam et al (2000) conducted a research in the area of potentials identification and ecotourism measures in order to protect Mangrove sundarban forest’s sources and plant life and animal life, using Geographic information system (GIS) as a tool, satellite’s imagery and information technology (IT), they tried to decrease the destructive effects in forest sources [1]. Novotna (2007) presented the identification and evaluation method of the geographic potential for tourism in the Plzen region. He believed in four steps: 1. suitable variables to evaluate the potential for tourism. 2. Chosen prerequisites in the form of processing layers. 3. Evaluation of geographic subject by Delphi. 4. general evaluation of potential using of algebraic functions can present the output map for evaluating ecotourism potentials [7].

Feng and Morrison (2002) applied GIS in tourism and hospital query in Brown County (India) [5]. In a
study by Dondo et al (2003) they worked on the GIS application in Zimbabwe tourism planning. Due to instability in agriculture and also because of unstable weather conditions and fluctuation in farming produce in the international market, the attention of the government was focused on the tourism industry. Accordingly, different information sights relating to tourism facilities, national parks, ways, statistics and the like are prepared for the applicant. The purpose of this project in Zimbabwe is to find suitable tourism places to develop in future [4].

Andrea et al (2009) by use of multi-temporal land sat imagery (1989-2005), described the rate and range of land cover change throughout the Angkor basin. They show that a larger proportion of the area of deforested (23.4 per) to afforestation (revive) (4.9 per) for the development of tourism was substitute [2]. Fung and Marafa (2002) has announced Feng Shui woodlands as a cultural heritage by careful investigation and evaluated it as a great potential for ecotourism in Hong Kong. They have suggested that geographic information system (GIS) can find the great potential for developing to tourism, by use of Ikonos satellites image and both spectral and textural data produce %86[6]. Also Bukenya (2002) by use of geographic information system (GIS) and multi criterion decision – making frame work (MCDM), developed a special multi objective, ranking, prioritizing Uganda’s national parks, and the result of national parks division including 3 subgroups. So that the national parks in the western region of the country are ranked higher than those in the other regions. For this purpose that the importance of subject, potentials, and different abilities of ecotourism, Gilan 25 basin (Shemrood) have been known by use of geographic information system (GIS)[3].

2 Data and Methods

Shemrood 25 water Catchment basin is one of the catchment basin to end in Caspian sea, that is located in 47 kilometer distance of center of province (Rasht), eastern longitude 49°50’9”to 49°50’12”and northern latitude 36° 55’21”to 37° 09’21”. The whole basin perimeter was 72.10 Kilometer that has allocated almost about 18961.81 He. This basin has been formed of 13 Hydrological sub basins and 3 None Hydrological sub basin. The lowest height of the basin 30 meter and the highest is 2100 meter with the middle height of 775m (Fig.1)

First, in this research, the entire basin divided into 3 separate parts that include plain zone, to 200 height meter of sea level, forest zone of 200 to 1500 heights and the height of more than 1500 m of the rangeland zone. Then by use of 1:25000 topographic maps of contour 50m prepared Triangular Irregular Network (TIN) map. In order to produce the map, slope and aspect, the preparing TIN changed to Digital Elevation Model (DEM). For tourism settlement area fixing, has been extract the without cover points as a separate layer. For settlement Query utilized of 3 slope layer, without cover plant space and aspect by 3 region classification, plain, woodland and rangeland. At the end decentralized and centralized settlement suitable places extracted for tourist with the overlay of layer in Arc GIS software environment and weighing in layers by Boolean Logic (Fig.2)
3 Results

To locate appropriate tourist settlement with a consideration of 3 zone such as plain, forest, rangeland which have various potential to attract tourists, Factors like slope, slope direction and areas without plants as a gap space (in order to avoid the damages to natural sources in the region), were considered by analysis of separate layers for each zone. According to Boolean logic, the slope layer divided to unsuitable (0-20%) and suitable limits (% >20), as well as the effect of slope direction in 2 unsuitable and suitable categories (S, SW, SE, E, Flat directions) for centered camps Quarry. Region without plants was considered as a suitable effect and other land as unsuitable in due to plant. With overlay of above layers in the 3 regions of suitable settlements determined for tourist to use potentials of the region. Any way the camps with less than 0.1ha were removed because of lack of suitable facilities for tourists.

3-1 Plain Regions Potentials

In the lower part of basin under investigation plain the height of which is less than 200 meters sea level, which includes 3016 ha of the south coast of Caspian Sea.

Twenty two suitable camps have been assigned for tourist settlement based on the slope, slope direction, and gap space by overlay of the layers. The camps one with 0.1-0.5 area have most frequency (7 site), but the camps of 1-2 ha have the least frequency in the plain area. Scattering of site camps (Fig.3) shows that they are more than in the East plain area and small area’s camps have similar scattering of site.

3-2 Forest Regions Potentials

Forest zone is located between mean plain and rangeland, and its height is 200 to 1500 meter that is included in this basin study of plane equivalent to 14280 ha. These Forest have various species and special in Hircanian species that include old, forests in the world: Pterocarya Fraxinifolia, fagus orientalis, Alnus glutinosa, froxinus excelsior, Gleditschia caspica, Parrotia persica, Diospyros lotus, carpinus betulus, Crataegus aronia. Density forest, co density forest, and sparse covers ordinary, 12648, 2807, 1036 ha. The most criterian in forest zone for choosing camp is the gap space because of preventing demolition of natural sources that 15 Quarry camps include by layer overlay with the most area 0.1 – 0.5 ha and is suitably distribute in forest land plane (Fig.4).

3-3 Rangeland Regions Potentials

Rangeland zone is upper part of the basin under study with the altitude of sea 1500 – 2020 equal to1642 ha of the basin study. Rangeland species with medical
uses such as Officinal’s Borage, Echium amoenum, Arctium lappa, urtica dioica, viola odorta, Thymus kotschyanus, Descurainia Sophia L, Astragalus that are attractive for tourism and have a wide range of variety, especially in spring and summer. In this zone layers overlay, 13 Query camp with the most frequency of 2-10 ha. On the whole accumulation of settlement camps take place, mostly at the end of the basin regions and that altitude of 1750-1950 meter (Fig.5).

Fig.5. classification of sites in rangeland zone

4 Conclusions and Discussion

The main goal of this study had been to determine central and decentralized camps of tourism because camp’s position is also of importance from the view of availability, placement, and view aspect of natural sources. For this reason, connecting road also has resulted in camps quarry one of the 3 zone, plain, forest, and rangeland. In During this plants layer of connecting road was added to determine centralized and decentralized camps. Then road Buffer was used as 100 meters on both sides (Fig.6).

On the basis of accessibility, query camps was considered for tourist settlement plain zone 9 number, forest 4 and rangeland 3 site ordinary with area almost 11.11, 5.11, 35.24 ha. The camps outside of Buffer are as transitory and decentralized camps for tourist settlement at 13 sites (plain), 9 sites (forest), 10 sites (rangeland), with area to the extent of 109.59, 12.17, and 22.73 ha.

Respecting between them (introduced camps) 16 sites are the best for tourist settlement. The settlement query had been to decrease human destructive effects on natural sources as settlement camps taking into consideration the gap space layer. At the end, we should say that the land use study and determining, curability of and introducing area can uses of tourism industry to along with natural sources protection for the region natives in respect of economic aspect.

References


