To determine tourism range capacity the protected zone of Gando

Hossein Janparvar[1]*, Maryam Karimian Bostani[2] and Mahnaz Nasrabadi[3]

[1]Department of Geography, and Geography Tourism Planning, Islamic Azad,
 University Zhedan branch, Zahedan, Iran
[2]Department of Geography, Islamic Azad University, Iran
[3]Department of Environmental, Islamic Azad University, Zahedan branch, Zahedan, Iran
*Corresponding author

KEYWORDS

Tourism,
analysis ecologic
potential,
tourism carrying
capacity,
protected
zone of Gando

A B S T R A C T

Today, tourism is changed to one of the main levers in social and economical development in many areas of the world. The protected zone of gando in south- east of iran and in north of oman sea shores to having the beautiful views in passing coastal road, exist of hara, jungle, some pools and pond to life of small snout crocodile and exist of different herbaceous and animal species is from beautiful zones and attractive tourist and transferred to one of the considered centers tourists. To determine and program the range capacity to reduce environmental suffers is necessary in protected zones. Generally, the range capacity is understanding with meaning of changeable limits (LAC). In this article used from ecologic model of master tourism development and GIS to analysis the ecologic potential of one zone and then with applying this model (TCC) accomplished to quantitative estimate of actual and effective physical capacities and results are showing that present position of tourism activity in protected zone is more lower than its range capacity level although, the present position because of be deformed the stability standards, as well as , can cause to more stability , also with stable programming and management , has the accepting capacity.

Introduction

Today, tourism changed to one of the main levers in social, economical development in many areas of the world and shores, seas, pastures and groves because of the variety of recreation resources and potential capacities in natural tourism always are changed to one of the considered centers for tourists.

Also tourism industry is necessary to true economic development and protection of natural sources. In this duration, it is essential that from one side national culture unique and advantages of working and from another side the effects of rapid weather changes on some zones where accepting

tourists such as seas shores are considering (way-Gi and Solla. 1390:p.56). So, tourist development at the zones of natural environments, whether will influence some effects and results on environment and can cause many problems to people who lived in these zones i.e to destroy jungles and herbaceous covering, accumulation and increasing of rubbishes, making noises, destroying farms and gardens or vice versa can has some positive effects such as protecting from environment, protecting from historical and ancient places and repair them and building enclosures and to make possibilities, infrastructure and face structure services. So, the analysis of tourism activitiy by applying quantitative, exact, application and logical methods to the best management of zones and tourism places also are feeling more and more (parto, 2001). Torismia a kind of using from space with various amis and motives and has a stream of reciprocal capital, human , culture and action among together , that influences different in geographical space (briedenhan , 2004). Hence , the tourism management and development are considering a main factor in obtaining to the permanent development in a such way that be compatible with environment and don ̛t cause decreasing quality.

So, to understand and knowing the tourism effects on environment for tourism programming in environmental point of view is the first and important problem (Ranjbarian and Zahedi , 73 :1379).

To last 1970, the tourism introduces as an activity without risk and always emphasis to the suitable results and economical advantages from 1980s, different researching results and reports emphasis to the unsuitable tourism environmental, cultural, social and environmental results (Rehnamay et.al ;1387, 18)

When human activities don ̛t many effect on local characteristics, still there are balance and equilibrium among human activities and local situation. in this way. The first disputable issues is the amount of environment capacity to installation of human activites that asks a special limit of thresholds (shorcheh, 1388, 30). To determine accepted capacity of one aim need to pay attention to the valuable opinions and judgement of tourist and residents. The meaning of accepted capacity of one tourism aim is based on this hypothesis that late or early a tourism aim will reach to a point that after that the setting will be waiting to the aim.

In other words, many tourists will cause to destroying the tourism resources and attractions, so, analysis of the aim accepted capacity will be necessary. To determine accepted capacity tourism is the essential policy in programming that usually is doing based on characteristics and also it is a reflex for analysis of tourism markets. The accepted capacity are computing by making the development limits and the number of essential tourism the place (Hassanpour and et.al, 1390, 181-180).

Clearly, carrying capacity to the permanent keeping and development of the environment is a main necessity. The carrying capacity is maximum using that can apply from each area, without this using cause to negative effects in sources and/or decrease the amount of visitor satisfaction , or impress unsuitable effects on society and also its culturs and economic .

It is clear that recreation resources often basis on natural possibilities and capacities exist in each zone are programming and / or considering a minimum main factor to determine one place as recreation. So, in such situation the protection of quality and

quantity of this group of natural resources for permanent using of them and also presenting acceptable limit of a recreative analysis to visitors is a complete necessary (Naigel, 1994).

It is important in estimate of range capacity (bearing) that there is one kind of compromise between maximizing to obtain an acceptable limit of thresholds changing and effective indicator. Each zone has limit ability in attraction tourist and some activities related to it that often these limitations are determining to the range technique in structure of permanent tourism development theory. There are different methods in estimate of range capacity that most reliable presented method is some directions presented by world-wide union custody of nature and natural sources (IUCN) that in 1996 usually they are presented to estimate the range capacity of suitable areas to tourism development into kept areas and under management.

At least we can say that the range capacity with presenting quantitative estimate based on quantitative assessment is as a deciding system in relationship to the other deciding orders in stages of ecologic knowledge. Totally tourism range capacity: some of the visitors who don't produce any ecologic irrevocable destroying or changing for eco-system into an area or it is a maximum recreation in form of number and activities that in one area with one eco-system before unacceptable decreasing or irrevocable in ecologic values can occur (Bookly, 1999).

In discussion about range capacity and its application in tourism presented an article by ferhadi and shorjeh (1386) that analysis with considering permanent tourism indicators of determining tourism range capacity the temple of anahita in kangavar. Tabibian (1386) by using of quantitative

method of TCC to determine ecologic range capacity of valley realm. Hassanpour (1389) determined tourism accepted capacity in salt desert areas of Iran by using of TCC model and presented the range capacity for areas of Farahzad, Bandrig and shahdad desert.

Methods and materials

Description of studied area: the preserved area of gando with 465181 h is located in south-east of sistan and balouchestan province and extremely of south in $61^{\circ}53$ length 61° 09 36 to 26° 16 northern width and 25° 03 to 33 eastern of Iran in eastern limit of demarcation. Map 1 shows the geographical limitation of preserved area of gando.

The management of this area is under supervision of general office of environment preservation of sistan and baluchestan province. This studied area from political and administrative divisions point of view in bounded of chabahar and sarbaz township in Iran is located. On the basis of applied considers, there are 83 villages into gando have inhabitants and there are not any urban point in this limitation.

Methodology

The present study is for purpose of aim is applying and with regard to the applied method in descriptive-analytic researches. At the presented methodology to analysis the ecologic range of capacity by world-wide union of presentation from nature and natural sources, the analysis of range capacity is applied in 3 consecutive stages (Lascurian, 1996). 1-physical range of capacity 2-real range of capacity 3-effective range of capacity. To analysis the bearing capacity of tourism, at first the suitable areas and places for entrance the tourists are

determined. These areas are specifying in two parts: concentrated tourism (includes that group of recreations where needing to development such as swimming, skiing, walking estuary, camping, cycling and visiting from cultural works) and developed tourism or concentrated tourism (includes that group of recreations where don't need to developing such as travelling in mountains and hunting or need to a little developing such as fishing, travelling to desert, riding and sightseeing from animals in nature (Rashidi, et al; 27-26, 1389). Model of analysis of the ecologic potential of one land or area that in one way is a kind of land readiness and has the most suitable and possible applied type of land in programming area (Makhdom, 1381, 212) and also used to determine the concentrated and extensive method. To assessment the analysis of ecologic potential used from 7 criterions: height, gradient, direction of gradient, soil, geology, herbaceous covering and climate and by utilizing of GIS and the model of served ecologicy, the map of concentrated and extensive areas of the preserved zone of gand supplied. Then the assessment of tourism carrying capacity applied by using of TCC and then it is analysis based on amount of effective, real and physical carrying is different stages of extensive and concentrated tourism.

Findings

To assessment the physical and real carrying capacity, at first we should determine the possible areas and places to entering the tourists, i.e. the area of zone that it is suitable to accepting tourists. There areas are presenting in two parts of concentrated and extensive tourism.

The preserved area of Gando has 465181 h extent that according to the above table (1), of this amount, 93036 h is for developed tourism ad also 200 h have the development

potential for concentrated tourism and other areas are assessing to preservation and another applications.

The carrying capacity is a criterion that evaluates the using scope without entering any loss. In other words, the range capacity is a method which mostly are regarding the reciprocal effect of recreation activities with natural or semi-natural eco-system and also participants. The tourism world-wide union describes the bearing capacity on the basis of below items: the levels should be preserved as don't damaged on physical place and don't have cultural, social and economical problems. The number of participants should be agreeable with some aims and designs obtained from from the kind of tourism activities and environmental experiences (NahrLiand Rezaee; 102, 1382).

Physical carrying capacity (pcc): the carrying capacity is the maximum number of participants who have a physical presence in certain place and time. This number can evaluate basis on below formula for tourism possible areas:

$$pcc = A \times \frac{v}{a} \times Rf$$

that where, A is the possible area to using of tourists, v/a is the special amount that each visitors are needing to easily can transformed and don't have interference with another physical phenomenons or other people (usually) this amount for one usual person is horizontal area of 1 m^2 and is changed in one grouping tourism activity by attending to the natural obstacle, area sensitiveness and/ or safe observation and its regulating will be by tour guidance and Rf is the daily number of visiting from one place and is evaluating on this base.

The physical carrying for preserved area of Gando evaluates for each types of

concentrated and developed tourism separately and in two stages.

About developed tourism, the suitable area is 93036 that proposed in 40 to 100 people/hectare (WTO 1995) and according to the statistics (the union of preservation environment), the average of tourism staying at the area is one day. The physical tourism carrying capacity in developed tourism of preserved area is 1300 people/day. To concentrated tourism, the susceptible area is 200h and the essential space for each person is 10 to 15m (WTO 1995), then the carrying capacity of concentrated is 133333 people/day. This capacity by no means can cot be a basis of programming because it describes the capcity of physical and materials (Hassanpour, 1389).

Real carrying capacity (RCC): the real bearing capacity is the maximum number of visitors from one tourism place which they are permissible to the limiting factors that caused to the special situation of that place and the effect of these factors on physical bearing capacity that visiting from that place.

These limiting factors are obtaining by presenting the biologic, ecologic, spcial and management variables and situation (Tabibian and others; page 23). Of course we should presented that limiting factors of each zone can just special to that zone (Ghanbari Nasab, Ali, 101: 1388). For example, flood in one area is a limiting factor, while there is not this threating in another zone (Shorche, Mahmoud, 31:1386).

In other words, the limiting factors is depending to the creation situations and characteristics of each zone completely.

RCC accounts basis on below formula:

$$RCC = PCC - Cf_1 - Cf_2 - \ldots - cf_x$$

$$RCC = PCC \times \frac{100 - cf1}{100} \times \frac{100 - cfx}{100} \times \frac{100 - cfx}{100}$$

The limiting factors are obtaining by considering to the frame, social, ecologic and environmental variables and situations (Hassanpour, 1389). In this study, the limitin factors are including the moist weather, radiation intensity, storm, severe raining, temporary vacation.

Every cfs are limiting coefficients that applying as limiting factors and are evaluating as a proportion of total desirability. In this study, the moist days (%24) are obtaining and are regarded some days with severe raining and storming 14 days and also for intensity of radiation included 5 months (khordad, Tir and Mordad) That for each day is regarded 4 hours and 2 hours for Shahrivar and ordibehest that totally, 23 days of year (aerology organization, statistics 1385-1375) also the direction of radiation intensity evaluated.

On the basis of above formula, the coefficient of limiting factors in studied area is %34/2.

The capacity of effective range (ECC)$_1$: The maximum number of visitors from one place that capability existence management of administration it has as permanent subject, called the capacity of effective range (Farhood: , 1368)

This criterion of the combination of real range capacity evaluates by management capacity (MC) of area (zacaria, 2011).

$$ECC = Rcc * MC$$

Management capacity or MC evaluated %36 on the basis of human forces variables, infrastructure possibility, equipments and services on the based follows formula.

MC=100-FM/100

FM=m/M*100

Where FM the coefficient of management adjustment is m the existing capacity and M the capacity of ideal management.

In this study by using of GIS, the evaluating of ecologic potential at the studied area applied, For this aim, used of 7 variables including of gradient, height steps, geology, herbaceous covering and climate and also determining tourism capacity evaluated by TCC model. After the determining of carrying capacity, should tourism at the area and its accepting amount be organizing and accommodate with range capacity of area. By attending to the obtaining results can program in two ways: first, to accepting many tourisms, we are following of increasing the carrying capacity of area.

The increasing of carrying capacity from physical point of view can say that it is not acceptable but from real carrying capacity point of view, almost can provide this way with decreasing the limiting factors. E.g. some of the unsuitable application such as unapplied water areas in the area can change to tourism application and/ or some areas which are not susceptible for agriculture but in present time they are under cultivation change to tourism application and also with increasing the keeper-environment post of duty and human forces and making services, increased the effective carrying capacity in a lot of amounts but now, the most important problem in area is existing sensitive settlement and about protected areas, discussed about their protection. So,

carrying capacity also applies at the same direction of protection issue. Second, many entering to the protected area suffers to its environment. In this way, should attended to the accepting capacity of tourism to these areas.

Then, the best manned is that by attending to the tourism carrying capacity of area, not only prevents from entering most tourism but also the organized and harmonious entering of tourism leaded to the tourism destination and tried to each attraction and application based on its potential, accepted a tourism. Here, two groups of concentrated and developed tourism are presented and the carrying capacity to both groups are evaluated separately.

Because in many cases, the tourism activities and attractions to tourism, also attending to these cases. Of course, type of tourisms also has importance. So, the scientific and cultural tourisms very much importance to the discussion of protection from environment and inform to its demolition results, although many tourisms don't have these view. So, by attending to the statistics of environment protection organization and also many entering tourism to this area are public tourism, so, the tourism accepting capacity should presented most lower slope than presented results in this study to these are effective for protected areas as well as whole tourisms of area from permanent tourism point of view.

Periodontal disease is the main chronic infectious disease of the oral cavity and a principal cause.

Map.1 The position of preserved area of gando
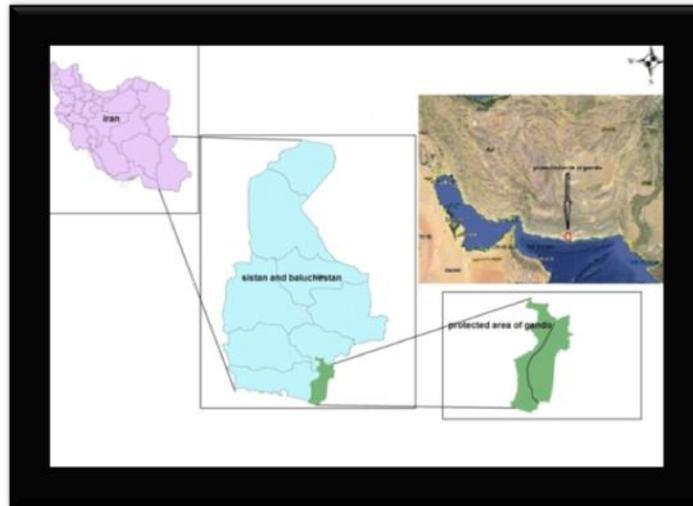
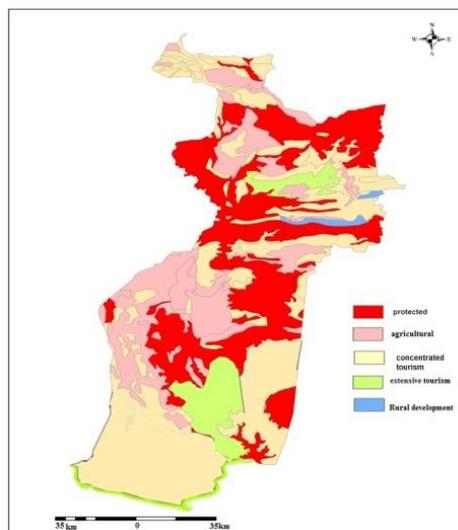

Map.2 Talent areas to developing tourism

Table.1 possible areas of concentrated and extensive tourism of the preserved area of Gando

Total (Hectare)	
200	Concentrated tourism
93036	Extensive tourism

Table.2 The results of real and physical carrying tourism

Real carrying capacity (person)	Physical carrying capacity (person)	
455	1330	Concentrated tourism
45600	133333	Extensive tourism

Table.3 The results of effective carrying capacity

Effective carrying capacity (person)	Physical carrying capacity (person)	
146	455	Concentrated tourism
16416	45600	Extensive tourism

References

Aerology general organization of SistanAndBaluchestan (1387), 10 years statistic (1386-1376), climate data of synoptic station of Sistan and Baluchdstan townships.

Shorcheh, Mahmoud (1386), To analysis tourism range capacity of Anahita programming, guidance professor Dr. Rahmat all… .Farhodi, Human geographical group.

Rahnamaee Mohammad Taghi, FarhodiRahmat all…, Ditmanandrias, GhadamiMostaffa; (1386); To consider carrying capacity of tourism destination with emphasis to the host society. (case study: study of kelardasht city); human geographical process; No. 66, p 33-17.

GhanbarNasab, Ali; (1388); To analysis trace of tourism cognitive canvas the second houses in rural areas, master thesis of rural geography and programming, guidance professor: or Mohammad salmani, Tehran university, human geography group.

Farhadi, Rahmatall… ,shorcheh, Mahmoud (1386), To evaluate tourism range capacity of Anahita temple of kangavar city, tourism study.Section, NO.7.

Tabibian, Manouchehr; Sotodeh, Ahmad; ShaiestehAhamd; Chalbianlou, Reze, (1386). To seek on meaning and methods of quantitative evaluation of range capacity and presenting an application sample based on experience the effective programming in tourism development of Abbas Abad valley-Hmadanganjnameh-beauty arts publication, NO. 29.

Ali Zadeh Mohammad, Oroji Hassan, MolaeeGhalchimohammad, Jaafari Reza; (1390); To determine tourism carrying capacity in ken and solghan, to prevention from natural sources; collection papers of third student congress of geography, Tehran.

Nahri, Davoud, RezaeeSahar; (1382); To consider and describe the recreation

range capacity; Ecology Journal, NO 29.

Oroji Hassan, Gharakhloo Mahdi, Alizadeh Mohammad; (1390); protection of animal pieces of shidoor island, A step to tourism development, collection papers of seventh national congress of the Persian gulf.

Abroosh Mahdi, JahanianManouchehr; (1390); To consider the effect of climate on agriculture in ghshm island and presenting climatic design ways; collection papers of seventh national congress of the persian gulf.

RashidiArman, MakhdomMajid, Faghihi Jahangir, SharifiMorteza; (1389); to evaluate Eco-tourism in surrounding jungles of zaribar pool by using of geographical information system (GIS); environment process, first year, NO. 2, p 30-19.

MakhdomMajid (1381); foundation of land center, Tehran university publication, fifth edition.

Vaygichak and sola, Edward vafaee (1390), Tourism in total view, translation by:Aliparsaian, Saiied Mohammad earabi, Tehran, Cultural process office.

RnajbarianBahram and Zahedi Mohammad (1389), To recognize tourism industry, Isfahan, ChaharBagh.

Hassanpour Mahmoud, AhmadiZeinab, Elyasi Hassan (1390); To determine tourism accepting capacity in salt dessert areas of Iran. Case study: shahdad, maranjab-bandarig and Egypt-Farokhzad, tourism studies section, NO 14, p. 195-177.