

---

Contents lists available at Sjournals

Scientific Journal of  
**Pure and Applied Sciences**

Journal homepage: [www.Sjournals.com](http://www.Sjournals.com)



---

**Original article**

## **Dovecots: tourist attraction of Isfahan villages**

**A. Ansari<sup>a,\*</sup>, D. Heydari Bani<sup>b</sup>**

<sup>a</sup>Master of Restoration and Conservation of Historical Buildings, Department of Conservation, Isfahan Conservation and Restoration Branch, Art University of Isfahan, Iran.

<sup>b</sup>PhD. Candidate in Restoration and Conservation of Historical Buildings from Art University of Isfahan, Assistant Professor at Art University of Isfahan, Conservation and Restoration Branch, Isfahan, Iran.

\*Corresponding author; Master of Restoration and Conservation of Historical Buildings, Department of Conservation, Isfahan Conservation and Restoration Branch, Art University of Isfahan, Iran.

---

**ARTICLE INFO**

---

**ABSTRACT**

---

*Article history:*

Received 15 June 2014

Accepted 21 July 2014

Available online 25 July 2014

---

*Keywords:*

Isfahan

Rural tourism

Rural landscape

Tourism attraction

Dovecot

---

Today, tourism is considered as one of the major economic activities in many countries. Given the financial resources devoted to and the workforce involved in tourism, it has appeared as a global thriving industry. One of the notable subdivisions of this industry is rural tourism. This kind of tourism has played a considerable role in attracting tourists and in helping economic activities all around the world. Iran is no exception. In this regard, among the cities of Iran, villages of Isfahan have a good potential for rural tourism. Also, considering the existing problems in Isfahan villages such as water shortage for irrigation, low agricultural productivity and joblessness etc, rural tourism may be a reliable economic alternative. Of the old structures survived in Isfahan villages, dovecots are especially important. Variety in form and size, fascination of the indoor space as well as harmony with surrounding nature are among the main rural attractions of the dovecots for tourists. Unfortunately, some of the dovecots are disappearing or have become deserted. In this connection, the studies so far done on dovecots have mainly examined architectural features of the dovecots as historical structures; little attention has been paid to the visual character of them as rural landscapes and tourism attractions. In the present study,

---

after conducting field observations, collecting and processing data, the conditions of villages with dovecots were analyzed. Accordingly, 18 villages- based on 11 criteria- were compared with each other and then ranked. The villages enjoying better facilities, better accessibility, more dovecots and cultural, historical and natural attractions were ranked higher. Thus, higher rank villages can be considered as potential tourism centers locally and regionally.

© 2014 Sjournals. All rights reserved.

---

## 1. Introduction

Since the time of Industrial Revolution, tourism has started to be recognized as an industry. The industry basically relies on traveling and watching by means of which people discover realities through reflecting on their observations and communicating with others (Amiri, 2009, 186). It is expected that till the end of the coming decade tourism appears as one of the most profitable industries of the world. In 1998, tourism superseded computer and car-making industries. Still, it has been anticipated that till 2020 the most lucrative industries of the world, that is, oil and gas industries, will be ousted by tourism industry (WTO, 2003). Rural tourism, as one of the most important and popular subdivisions of tourism, has played a key role in this connection. Rural tourism is of special attention from the point of creating job opportunities as well as reviving rural regions.

Considering that the villages of Iran enjoy a wide range of tourism attractions, paving the way for developing rural tourism in such regions may lead to social-economic development and revival of cultural and historical values. This has been on focus in 20-year charter of the Islamic Republic of Iran (till the year 2025) with the aim of removing obstacles and developing potentials in rural regions (Iran's 20-year vision plan, 2003). In line with this objective, the villages of Isfahan, enjoying various climates, historical buildings, picturesque landscapes and fascinating phenomena, deserve special attention.

One of the tourist potentials of Isfahan villages is their dovecotes originally built among the farms to nest the doves for their dung. Historically, dovecotes were so important that by order of Gazan khan, one of the Mongol rulers, local collectors were banned from taking pigeons from peasants. Also, it was forbidden for hunters to cast nets near the dovecotes (Hamedani, 1989, 348). In fact, dovecotes have been not only important in terms of historical values; they also used to play a major in traditional agriculture and served as rural landscapes as well. The importance of this doubles when we recognize that dovecotes in Iran are mainly scattered in Isfahan, Azerbaijan, Markazi Province and Yazd. Still, the dovecotes in Isfahan reordered by the National Cultural Heritage Organization considerably outnumber than those in other cities.

In the course of time, due to development of cities and turning the agricultural lands into residential areas, so many dovecotes were demolished. Also, limited cases have been restored in urban green spaces. The serious problem, however, is that as a result of mechanization of agricultural activities as well as using various fertilizers the danger of disappearing dovecotes has seriously increased. Doing irrigation near the dovecotes, existence of several inheritors for a dovecot in occasional cases, negligence of doing regular conservation, low profitability, etc, are among the factors accelerating the disappearance of these historically valuable structures after being deserted.

In this connection, taking advantage of rural potentials through attracting investors and tourists may help sustainable development in rural regions. The importance of this doubles in villages having historical attractions recorded nationally. Therefore, it seems imperative to recognize and introduce such attractions in order to pave the way for developing rural tourism. No doubt that the needed provisions and justifiable plans must be made beforehand. Accordingly, the present study aimed to answer the following questions:

1. In what villages of Isfahan, can dovecotes-as tourism attractions- help develop rural tourism?
2. What are other factors (in villages having dovecotes), other than dovecotes, which may help attract tourists?
3. Based on potentials of villages, how villages having dovecotes can be ranked?

## 2. Review of literature

### 2.1. Rural tourism

The idea of rural tourism, as a social and recreational activity, was posed in Europe in the second half of the 18th century (Monshi Zadeh, 2005, 50) and has come to the fore since the second half of the 20th century with advent of various vehicles (He, 2005, 71). Gradually, considerable numbers of middle-class groups from cities started to travel to villages with the aim of visiting natural landscapes (Ghaderi, 2003, 22-23). In the process of time, the concept of rural tourism was defined differently by different individuals; while some defined it as visiting a place different- often placed in suburbs- from ordinary work and living conditions (Grefe, 1994, 23), others consider it as all tourism activities occurred in rural regions (Sharpley, 2001, 11). Still, others offered similar content with different wording (Saghaie, 2004, 112; McIntyre, Hetherington & Inskip, 1993, 67; Holland, Burian & Dixey, 2003, 12). However the effective factor, which has attracted the researchers' attention beyond various definitions, is the impact rural tourism may have on rural development. In fact, rural development has been seen as an important factor for rural development from three stances:

The first stance sees tourism as a strategy to develop villages by means of which the rural atmosphere is reflected (Grefe, 1994, 23; B. Lewis, 1996, 4). The second stance considers tourism as a policy to reconstruct economy in rural communities (Slee, Farr & Snowdon, 1997, 180-181). In fact, the rationale to develop tourism in such communities is compensating low income of peasants, offering new job opportunities and enhancing social conditions in villages (Opperman, 1996, 88). Therefore, rural tourism develops through interaction with other economic sectors and, in turn, other economic sectors develop as well (Rogerson, 2004, 15). Finally, the third point of view holds that tourism is a tool to create sustainable development and to conserve natural resources (Aronsson, 1994, 77) and it requires, as a result, a thorough planning in order to exploit available opportunities and to foster tourism industry in its interaction with other sectors. Reaching a desirable sustainability, of course, needs a comprehensive strategy to keep the ecological balance of rural region (Vincent & Thompson, 2002, 156).

So far, various studies have been done on rural tourism through adopting SWOT (Strengths, Weaknesses, Opportunities, and Threats) approaches in order to evaluate its impacts (Roknaddin Eftekhari & Mahdavi, 2006, 1-31; Motiee Langrudi & Nosrati, 2011, 84-69; Andrej & Perpar, 2007, 223-228). In most studies rural tourism has been found as an effective factor in rural development which, of course, requires a thorough planning to keep the balance among different parts.

### 2.2. Dovecotes of Iran

Dovecotes are architecturally functional elements and are considered as one of the vernacular architectural forms of the country. Dovecotes have been of social and cultural importance; the word dovecote has been used in various historically important books including Narshakhi's *The History of Bukhara* (Narshakhy, 1972, 40-41), foreign and national travelogues (Ibn-e Batuta, 1982, 210-211; Chardin, 1971, 122; Kaempfer, 1981, 217), Agricultural texts (Birjandi, 2008, 131-133), poetical works, Geographical books (Hafiz-i Abru, 1970, 80-82), etc.

Recent studies on dovecotes may be divided into two main groups: those which have studied dovecotes historically and those which have studied them architecturally. Based on the first-group studies, the history of dovecotes may be attributed to 1050 years ago (Farhadi, 1993, 6). There are also pieces of evidence which indicate dovecotes were even available in Sassanid era. Given the fact the most survived dovecotes are placed in Isfahan Province, the second-group studies have mainly focused on dovecotes in Isfahan. In this connection, dovecotes in Isfahan were examined in a rather comprehensive study in term of number, architectural characteristics and geographical location (Mahmoudiyan & Chitsaz,

2000, 69-177). Also, considering the architectural difference among the dovecotes they have been classified in terms of form and structure (Heydari Bani, 1999, 201-222) and in terms of plan (Mahmoudiyan & Chitsaz, 2000, 182-213) as well.

Although there are certain different aspects among the dovecote in Iran distinguishing them from each other, one major common function which differentiates them from the dovecotes in other courtiers is that they were built especially for dung. However, they were originally built in European courtiers to produce dove meat (Spandl, 1998, 1). This functional differentiation has been reflected in the architectural form of the dovecotes in Iran and that of those found in European countries represented in certain studies (Mirzaie, 2006, 109-139; Zarghami, Okhovvat & Azemati, 2012, 37-52).

### 3. Methodology

According to the List of National Historical Works, the number of dovecots recorded during the years 1931 to 2009, was 106. Of these dovecotes, eighty are placed in Isfahan. Also, based on the recently established geographical zoning of the country, sixty dovecots are placed in Isfahan villages (National Cultural Heritage Organization). In this study, Isfahan villages with dovecots, as historical attractions, (at most 30 km from Isfahan) were selected in order to identify, restore and preserve the function of dovecots so that the preliminaries for job creation activities and economic improvements of the villages are provided.

Having examined nationally recorded cases, the dovecot villages were investigated in terms of library and field studies. Field studies were carried out based on local observations, the accessibility of the intended location, the local vegetation and other factors which may potentially attract tourists so that a tourism site can be planned. In order to compare the standards and to determine the potential function of each village SPSS soft ware was used. Also, Z-score method was used to provide the matrices of data so that indices may be homogenized.

### 4. Rural tourism

Tourism, in the process of time, has turned into a technical, economic, social and ecological issue (Rezvani, 1999, 27). Today, a new form of tourism, rural tourism, has been emerged with the aim of sustainable development of villages. Also, it can generate new job opportunities for rural communities (Walpole & Goodwin, 2000, 565). Since different experts have considered rural tourism from different points of view, there is no a consensus about the definition of rural tourism among them. For example, these are a few definitions of rural tourism provided: a multi-purpose activity in suburbs; the interaction between man and land in villages; farm and non-farm activities in rural communities. As seen, in each of these definitions, a certain aspect of rural tourism has been considered (Ghaderi, 2004, 21-22).

One of the fairly comprehensive definitions provided for rural tourism is as follows "rural tourism includes recreational activities in locations which are formally considered as rural areas by the authorities. Rural tourists are provided with food, accommodation and locally produced or raised items" (Roknaddin Eftekhari & Ghaderi, 2002, 27-28). Kinds of rural tourism have been given in table (1).

Given the problems in villages such as joblessness, low productivity in agriculture sector as well as over exploitation of natural resources, it seems necessary to take into account other economic alternatives like cultural tourism. This may pave the ground for enhancement of the (rural) economy as well as preservation of environment, local culture, customs and norms (Seidaie & Dehghani, 2010, 52-53). In many developed and developing courtiers rural tourism has been an effective approach to support the economy of rural communities in various ways. In these countries rural tourism is seen as an industry generating economic stability for rural communities (Sharpley, 2001, 109). What is certain is that the tourism industry is playing its role as a complementary economy along with other producing and service activities in rural regions (Roknaddin Eftekhari, Mahdavaei & Akbari, 2013, 126).

**Table 1**

Different kinds of rural tourism.

<b>Kinds of rural tourism</b>	<b>Purpose of traveling</b>
Natural	Visiting natural and ecological attractions
Cultural	Recognizing culture, history and cultural ancient heritage of rural tribes/ communities
Ecological	Visiting natural attractions and recognizing social norms and customs of peasants. This purpose may converge with that of the first (natural) one.
Rural	Residing in villages; participating in economic and social activities of the peasants; Gaining the experience of living in villages in a given time
Agricultural	Participating in traditionally agricultural activities of the peasants without leaving behind adverse ecological consequences
Farm	Residing in farms with the aim of participating in economic, agricultural and (seasonal) pleasure activities of peasants and taking advantage of various natural attractions
Recreational	Spending weekends/ off-days; Resting and enjoying cooler or warmer weather
Treatment	Medical/treatment purposes and using fresh/clean air
Pilgrimage	Making a pilgrimage ( and if possible ) buying needs and wants
Sports	Taking advantage of suitable climatic conditions for some sports

(Seidaie & Dehghani, 2010,56).

## 5. Dovecots

The dovecots of Iran were originally built to produce dung. Dovecots were safe nests for pigeons and had to be built in a way that could be easily exploited and managed. They were usually built in a way that both functional and architectural (aesthetic) aspects were met. Dovecots were as impenetrable as a castle against the natural enemies such as falcons, hawks, owls, crows, cats, foxes, snakes, rats and even hunters. In addition, they have been resistant against sonic resonance generated by simultaneous flying pigeons sometimes as many as fourteen thousands. This could happen by any outside or inside stimulus including a threatening sudden sound or being frightened (Farhadi, 1993, 4).

Dovecots were built in different locations including in the middle of farms. Pigeons were fed by farmers and they, in turn, would produce dung needed for fertilizing the lands which was usually collected from the openings built at the bottom of the dovecots. Generally speaking, dovecots may be considered as prime examples of rural/vernacular architectural structures in Iran built specially to satisfy the traditional needs of rural communities (Zarghami, Okhovvat & Azemati, 2012, 38). There is a close relationship between the function and form of dovecots and the location in where they are placed. The location of a dovecot is determined by the need it serves and usually is near the houses, gardens, farms and agricultural lands.

Dovecots differ from each other from several aspects including form, size (dimensions), capacity, location, local environment, geometry, materials, ownership, etc. They can be, nevertheless, divided into four basic groups in terms of form. This classification only deals with the exterior form. In other words, each group may have its own plan. The four groups include: cylindrical dovecots; cubic dovecots; clover-shaped dovecots and compound dovecots.

### 5.1. Cylindrical dovecots

Cylindrical dovecots are very common in Isfahan province. The most common cylindrical dovecots are those which consist of two cylindrical structures- one within the other (Figure 1). The outer cylinder is a little slanted to be more stable. Also, the outer cylinder is connected to the inner cylinder by means of several supports. The cylindrical form, circular cross-section and inner supports are among the factors providing the best static resistance against the outside forces.

There are openings on the roof through which pigeons enter the tower (Figure 2). These openings are in the shape of small decorative towers formed by two alternate brick rows creating the entering ways. In addition, there are small recessed spaces within the towers served as pigeon nests (Figure 3) (Heydari Bani, 1999, 207-208). Cylindrical dovecots are similar to each other in several aspects. However, each of them may totally differ from the other in terms of structural plan. They may appear as simple as a circle or as more sophisticated radial sectors. Usually, smaller dovecots have also a simpler plan. Depending on the location or ownership, the size or architectural representation may differ (Hezar Jarib Dovecot is a good example of this).



**Fig. 1.** A dovecot consisting of two concentric cylinders, Rahimabad (authors, 2013).



**Fig. 2.** The entering openings on a dovecot roof, Gavart (authors, 2013)



**Fig. 3.** Pigeon nests in a dovecot dovecot, Rashnan (authors, 2013).



## 5.2. Cubic dovecots

Cubic dovecots are the second common dovecots after the cylindrical ones. They are more common in Golpayegan, Khvansar and Khomeyn. They are similar to a large room in shape which the pigeon nests have been built within the inner body (Figure 4). Unlike the cylindrical dovecots which pigeons enter the main space from the small towers on the roof, in the case of cubic dovecots pigeons enter directly from dovecot walls (Heydari Bani, 1999, 208-209) (Figure 5). The entering openings on the walls have been arranged geometrically creating a fascinating decorative view (Figure 6).



Fig. 4. The inner space of a dovecot decorated dovecot, Qeshlaq (authors, 2013)



Fig. 5. The entering openings on the wall (authors, 2013).



Fig. 6. The view of a dovecot decorated by brickwork, Qudejan (authors, 2013).

### 5.3. Clover-shaped dovecots

Clover-shaped dovecots are common in villages of Lenjan and Mobarakeh (both placed in Isfahan). They consist of several lobes (Figure 7). They are usually consisted of 4,8,10, or 12 lobes and, unlike cylindrical dovecots, the cross-section of each lobe does not change in terms of overall height. Clover-shaped dovecots are usually simple and have no decorations. The only item may be considered as decoration is the plaster stripe around the tower view and the brick rows around the roof rim (Figure 8).

### 5.4. Compound dovecots

Compound dovecots, as the name implies, are consisted of a combination of forms. For example, Safaa dovecot in Najafabad, Isfahan is both cubic and cylindrical in shape. However, the upper part is usually cylindrical in shape (Figure 9). Still, the form of certain dovecots does not necessarily follow a given rule and merely has been formed to meet the agricultural needs and therefore are very simple in form. Such dovecots are usually smaller than others and have been built in a corner of gardens, cultivated lands, rural houses (Farhadi, 1990, 178) or castles (Hadizade Kakhki, 2006, 89-90).



Fig. 7. Karkvand five-lobbed dovecot in Najafabad, dovecot, Mobarake(authors, 2013).



Fig. 8. The interior and the roof rim of a four-lobbed dovecot, Jochi Isfahan (authors, 2013).



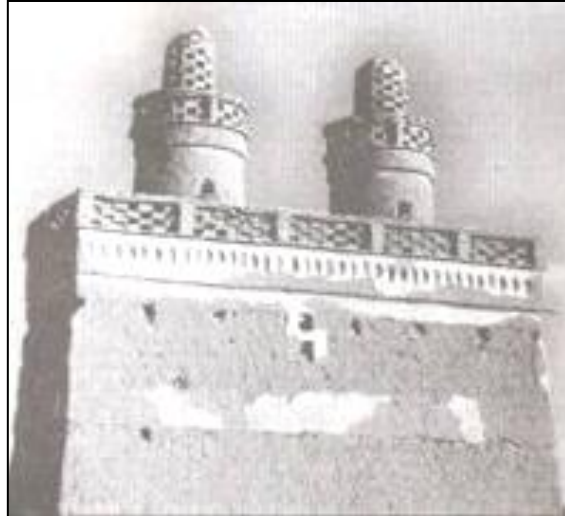


Fig. 9. Safaa dovecot in Najafabad, (Mahmoudiyan and Chitsaz,2000, 211).

#### 6. Evaluation of rural tourism in the studied villages

The province of Esfahan covers an area of approximately 100,000 km<sup>2</sup> that is 6.25 percent of the total area of the country. It is located between 30°43' and 34°27' N latitude and 49°38' and 55°32' E longitude (Governor General Office of Isfahan, 2010, 27). Based on the most recent national zoning of provinces carried out in 2012, Isfahan has 23 cities (Figure 10). Since Isfahan is a vast province with various climates all forms of dovecots mentioned can be seen in it.

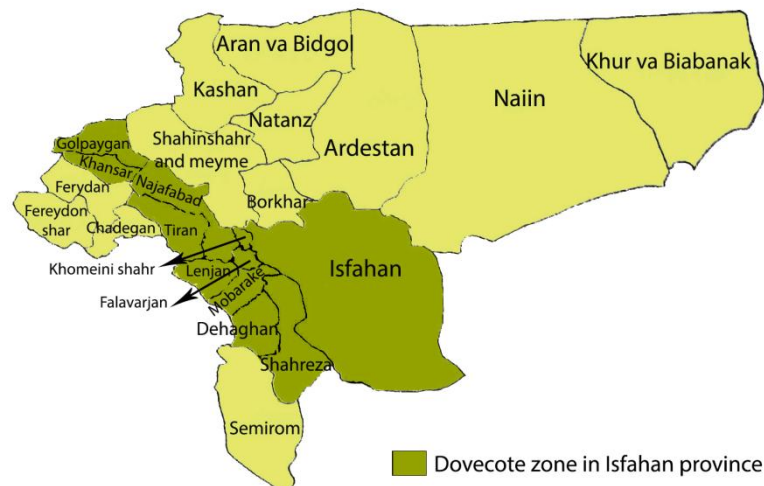


Fig. 10. Geographical limit of Isfahan cities having dovecots.

Also, since 71.5 % of the historical-cultural attractions of Isfahan province is in Isfahan city, tourism service sector has been always active in this city. The existence of such potential has motivated the foreign and domestic tourists to visit the city. According to the report released by the World Tourism Organization in 2000, one million foreign tourists traveled to Iran 80 % of which visited Isfahan. Also, based on an unofficial report, near to two million domestic tourists visited Isfahan in the same year (Naqsh-e jahan-pars consultants, 2010, 87).

Rural environment around large cities can play the role of holiday resorts for the city dwellers. This may reflect the importance domestic tourism in small scale which depends on two key factors: social class and time-place distance. In other words, the villages around the large cities have turned into resort places for domestic tourists in small scale (Countryside Agency, 2002, 16). Thus, the distance between the large cities and rural regions has been a determining factor in the present study. For this reason, the villages were examined which were within the range of 30 km away from the Isfahan city. These villages placed in Isfahan (Raddan, Molenjan, Jowzdan, Eshkavand, Denart, Gavart, Ziar, Haftshuye, Rashnan and Rahimabad villages), Khomeyni Shahr (Valashan and Dinan villages), Najafabad (Jowzdan village) and Falavarjan (Charborj, Huyyeh, Sohr va Firuzan, Vanhar and Ajgard villages) all had dovecots.

### **6.1. The criteria considered for rural tourism**

Considering dovecots as a rural tourism attraction is quite justifiable. Dovecots have cultural and architectural values indicating intelligence of their builders. The special architecture of dovecots as well as their massive mud-brick structures suffice to attract those interested in Persian traditional architecture. As Elisabeth Beazley put it visiting the dovecots of Isfahan, the delicacy of sculptural forms and charm of the interior design is enough to attract tourists to Isfahan (Beazley, quoted by Hadizade Kakhki, 2006, 71).

Given the serious debates, in recent years, on the importance of organic agriculture and putting aside chemical fertilizers due to their adverse environmental effects, revival of dovecots to produced dung seems sensible. At the same time, dovecots, as cultural heritage, the landscape of cultivated lands in which they are placed as well as the natural beauty of the pigeons nesting in the dovecots is a workable potential to attract tourists to the villages. However, other additional supportive factors, other than dovecots themselves, must be also got involved to facilitate the process of attracting tourists. In this respect, certain statistical data were examined and analyzed. The factors can be put into five groups:

#### **a. Historical attractions of villages**

Historical attractions of villages include dovecots as well as other historical buildings recorded nationally. Villages, in terms of the number of dovecots, may be divided into two groups: those with or less than five dovecots and those with more than five dovecots. The reason to consider this criterion is that it helps us to decide whether to create a tourism area or not. In other words, if the number of dovecots in a village is not considerable enough – irrespective of other determining factors- investment for tourism purposes does not make sense. Also, as mentioned before, the existence of other historical structures, other than dovecots, in the region is a bonus.

#### **b. The environment surrounding dovecots**

Establishment of dovecots in their original place, that is, in the middle of cultivated lands, is of high importance with respect of intended purpose- attraction of tourists. In some cases, unfortunately, undue human interventions have resulted in damaging the natural charm of the site; building walls and precipitate construction activities have resulted in unpleasant visual impression.

#### **c. Cultural and natural attractions**

The existence of Cultural and natural attractions is considered a bonus in attracting tourists. Since such attractions include various cases, they were examined in certain parts (rivers, hills and mountains, cultural and social values and customs).

#### **d. Facilities**

The existence of utilities (water supply, electricity, gas) and social services such as health centers, etc. is a positive aspect for villages. Facilities were studied under three distinct groups including infrastructure facilities; health and treatment centers and office divisions.

#### **e. Distance from Isfahan**

Given the importance of accessibility, two distance ranges for the villages of Isfahan were considered: within the range of 15 km and more than 15km.

### 6.2. Analysis and evaluation of tourism in selected villages

The needed data for villages were analyzed by SPSS soft ware and their matrices were provided (table 2). Then, each index was scored and the mean (formula 1) as well as standard deviation (formula 2) was calculated (table 2).

Formula 1: 
$$\bar{y} = \frac{1}{n} \sum_{i=1}^n y_{ij}$$

Formula 2: 
$$sd = \sqrt{\frac{\sum_{i=1}^n (y_i - \bar{y})^2}{n}}$$

**Table 2**  
Matrix of indices and scores in studied villages.

	Villages	Historical attractions		environment surrounding dovecots		Cultural and natural attractions			Facilities			Distance from Isfahan
		Multiplicity of dovecot	Other attraction	Dovecot in farm	Limited construction	rivers	hills and mountains	social values and customs	infrastructure facilities	health and treatment centers	office divisions	
1	Raddan	0	0	1	0	0	0	0	1	1	0	1
2	Mulenan	0	0	1	1	0	0	1	1	0	0	1
3	Jowzdan (in Isfahan)	1	0	1	1	0	1	0	1	1	0	0
4	Eshkavand	1	0	1	0	1	0	0	1	1	1	1
5	Denart	0	0	0	0	0	0	0	1	1	0	1
6	Gavart	1	0	1	1	0	1	0	1	1	1	1
7	Ziar	0	1	1	1	1	0	0	1	1	1	0
8	Haftshuye	0	0	1	1	0	1	0	1	1	0	1
9	Rashnan	0	0	1	1	0	0	0	1	1	0	1
10	Rahimabad	0	1	0	0	0	1	0	1	1	0	0
11	Ajgard	1	0	1	1	0	1	1	1	1	0	0
12	Huyyeh	1	0	1	1	1	1	1	1	1	0	1
13	Sohr va Firuzan	0	1	1	0	1	1	0	1	1	1	0
14	Charborj	0	0	1	1	1	1	0	1	0	0	0
15	Vanhar	0	0	1	1	1	1	0	1	1	0	0
16	Dinan	0	0	1	0	1	1	0	1	1	0	1
17	Valashan	1	0	1	1	1	1	0	1	1	0	1
18	Jowzdan (in Najafabad)	0	1	0	0	1	0	0	1	1	1	0
	$\bar{y}$	0.33	0.22	0.83	0.61	0.5	0.61	0.17	1	0.89	0.28	0.55
	sd	0.47	0.42	0.37	0.49	0.5	0.49	0.37	0	0.31	0.44	0.5

Having grouped data, indices were homogenized by Z-score method. The table of standards of studied indices was provided using formula (formula 3) (Zarabi, Rakhshaninasab & Aqaziarati, 2006, 473). Here,  $\bar{y}_j$  is the mean of each column and  $sd_j$  is the standard deviation of the  $j$ th column. Thus, the potential for tourism for each location can be calculated by summing values of  $z_{ij}$  (standardized values or Z-scores).

Formula 3: 
$$z_{ij} = \frac{y_{ij} - \bar{y}_j}{sd_j}$$

**Table 3**

Standard of indices in studied villages.

	Villages	Historical attractions		environment surrounding dovecots		Cultural and natural attractions			Facilities			Distance from Isfahan	z-score
		Multiplicity of dovecot	Other attraction	Dovecot in farm	Limited construction	ri ve rs	hills and mountains	social values and customs	infrastructure facilities	health and treatment centers	office divisions		
1	Raddan	-0.7	-0.52	0.46	-1.24	-1	-1.24	-0.46	0	0.35	-0.64	1	-3.99
2	Mulenjan	-0.7	-0.52	0.46	0.8	-1	-1.24	2.24	0	-2.87	-0.64	1	-2.47
3	Jowzdan (in Isfahan)	1.42	-0.52	0.46	0.8	-1	0.8	-0.46	0	0.35	-0.64	-1	0.2
4	Eshkavand	1.42	-0.52	0.46	-1.24	1	-1.24	-0.46	0	0.35	1.64	1	2.41
5	Denart	-0.7	-0.52	-2.24	-1.24	-1	-1.24	-0.46	0	0.35	-0.64	1	-6.69
6	Gavart	1.42	-0.52	0.46	0.8	-1	0.8	-0.46	0	0.35	1.64	1	4.49
7	Ziar	-0.7	1.86	0.46	0.8	1	-1.24	-0.46	0	0.35	1.64	-1	2.71
8	Haftshuye	-0.7	-0.52	0.46	0.8	-1	0.8	-0.46	0	0.35	-0.64	1	0.09
9	Rashnan	-0.7	-0.52	0.46	0.8	-1	-1.24	-0.46	0	0.35	-0.64	1	-1.95
10	Rahimabad	-0.7	1.86	-2.24	-1.24	-1	0.8	-0.46	0	0.35	-0.64	-1	-4.27
11	Ajgard	1.42	-0.52	0.46	0.8	-1	0.8	2.24	0	0.35	-0.64	-1	2.91
12	Huyyeh	1.42	-0.52	0.46	0.8	1	0.8	2.24	0	0.35	-0.64	1	6.91
13	Sohrva Firuzan	-0.7	1.86	0.46	-1.24	1	0.8	-0.46	0	0.35	1.64	-1	2.71
14	Charborj	-0.7	-0.52	0.46	0.8	1	0.8	-0.46	0	-2.87	-0.64	-1	-3.13
15	Vanhar	-0.7	-0.52	0.46	0.8	1	0.8	-0.46	0	0.35	-0.64	-1	0.09
16	Dinan	-0.7	-0.52	0.46	-1.24	1	0.8	-0.46	0	0.35	-0.64	1	0.05
17	Valashan	1.42	-0.52	0.46	0.8	1	0.8	-0.46	0	0.35	-0.64	1	4.21
18	Jowzdan (in Najafabad)	-0.7	1.86	-2.24	-1.24	1	-1.24	-0.46	0	0.35	1.64	-1	-2.03

Having examined scores based on the standardized indices, scores were ranked/leveled (table 4). Also data of the levels were classified (formulas 4 and 5). Here, n is the number of fields, k is the number of levels, R is the range of changes (the difference between the maximum and minimum z-score) and C is the difference/distance between the levels (Bazargan lari, 1999, 11). In formula (4), considering the number of fields n= 29, R= [(6.91- (-6.69))] = 13.6 and k would be about 3.76. Since k (the number of levels) should be a whole number, its value is approximately calculated as 4. The length of classes, based on formula (5) would be 3.4.

Formula 4: 
$$n = 2^k$$

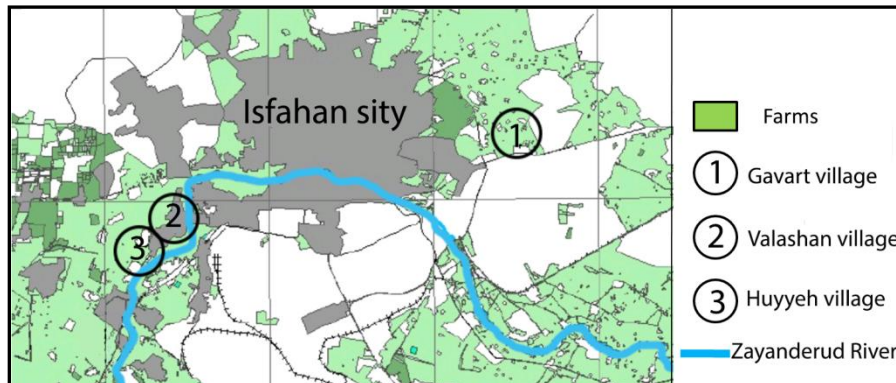
Formula 5: 
$$C = \frac{R}{k}$$

**Table 4**

Ranking of studied villages.

Hierarchy of tourism field	Index range (C)	Rural tourism field
Level one	3.5 to 6.92	Gavart, Huyyeh & Valashan
Level two	0.1 to 3.5	Sohr va Firuzan, Eshkavand, Ziar, Ajgard & Jowzdan ( in Isfahan)
Level three	-3.3 to 0.1	Mulenjan, Charborj, Vanhar, Dinan, (in Najafabad), Haftshuye & Rashnan
Level four	-6.7 to -3.3	Rahimabad, Raddan & Denart

Based on the obtained ranking, villages Gavart (in Isfahan), Valashan (in Khomeyni Shahr) and Huyyeh (in Falavarjan), not so far from Isfahan, stand in the first rank in terms of the number of dovecots (figure 11). Also, they have other historical buildings other than dovecots enjoying a good potential to attract foreign and domestic tourists. Such a suggestion is nicely in line with the third National Socioeconomic Development Plan in Isfahan Province. Based on the Plan, the first priority goes with development and making known the hubs of tourism in the province and with providing relevant facilities (Naqsh-e jahan-pars consultants, 2010, 49). Taking steps such as introducing traditional agriculture, restoring and resuming the original function of dovecots, building bicycle and pedestrian routes and creating green spaces are among simple, but, effective approaches to attract tourists to these regions. Other than the villages mentioned, lower-rank ones in the table can be used as tourism centers provided that certain shortages are solved.



**Fig. 11.** The geographical location of the 1st rank villages (Gavart, Valashan and Huyyeh) compared with that of Isfahan and Zayanderud River.

## 7. Discussion and results

Rural tourism aims not just visiting natural landscapes; it can also extend to visiting cultural and historical attractions considering the capacities of Iran's villages. One of the historical attractions of Iran's villages is their dovecots originally built to produce dung. Most of the dovecots of Iran (and nearly all kinds of them (part 5)) are found in Isfahan- a geographically vast city with various climates-. These historically valuable structures, as dung-producing plants and beautiful rural landscapes require more attention both functionally and physically. In addition, making known rural dovecots to foreign and domestic tourists, helps, indirectly, pave the way to develop villages through doing rural tourism.

In this study the villages of Isfahan province within the range of 30km away from Isfahan city were examined based on several criteria associated with rural tourism (part 6-1). Selected villages were ranked based on statistical analysis (part 6-2); that is, the more historical attractions in a village (higher-rank villages) the better the potential of attracting tourists. The 1st rank villages including Gavart, Valashan and

Huyyeh have considerable capacities of attracting tourists. The villages enjoy beautiful natural and cultivated landscapes as well as historical attractions. In certain cases, proximity to Zayanderud River (figure 11), one of the life-giving characters of Isfahan, has created a unique position for the villages. Supportive approaches to pave the ground for developing rural tourism in the villages and for taking advantage of dovecots may require a comprehensive examination of the villages; respecting the principles of sustainable tourism; dedicating sufficient budgets given the available potentials and providing needed service facilities.

## References

- Amiri, S., 2009. Isfahan and developing tourism industry," *Danesh nama*,. 167 to 169, 186-194.
- Andrej, U., Perpar, A., 2007. Role of Rural Tourism for Development of Rural Ar. *Centr. Eur. Agr.*, 8, 2, 223-228.
- Aronsson, L., 1994. Sustainable Tourism System: The Example of Sustainable Rural Tourism in Sweden. *J. Susta. Tour.*, 2, 1-2, 77-92.
- Bazargan Lari, A.R., 1999. Applied statistics (in Persian), 1th edition, Shiraz, Shiraz Univ.
- Birjandi, A.A., Edited by Iraj, A., 2008. *Márfat-I falahat* (in Persian), Tehran, Miras maktoob.
- B. Lewis, J., 1996. A Case Study of the Process of Tourism Development in Rural Communities in the State of India, Submitted to the Faculty of the University Graduate School Impartial Fulfillment of the Requirement for the Degree of Doctoral of Philosophy, School of Health. *Phys.Educat. Recrea.*, India Univ.
- Chardin, J., Translated by Abbasi, M., 1971. *Jouroal du voyage du chevalier Chardin en Perse & aux autres lieux de l' orient* (in Persian), 4th edition, Tehran, Amirkabir.
- Countryside, A., 2002. Land Management Initiative, Cheltenham, Countryside Agency.
- Farhadi, M., 1993. Survey on importance and history of pigeon houses in Iran (in Persian), Tehran, Publication and video center of Jihad Sazandegi.
- Farhadi, M., 1990. *Name-E Kamare* (in Persian), 2, Tehran, Amirkabir.
- Ghaderi, Zahed. (2004). The principle of planning for sustainable tourism in rural area (in Persian), Tehran. Munic. organizat. Iran.
- Governor General Office of Isfahan, Information and Statistics Division (in Persian)., 2010. *Annu. stat. Isfahan prov.*, Isfahan.
- Grefte, X., 1994. Is Rural Tourism a Lever for Economic and Social Development. *J. Susta. Tour.*, 2, 1-2 (Rural Tour. Susta. Rural Dev.), 22-40.
- Hadizade Kakhki, S., 2006. *Dovecote of Iran* (in Persian), Tehran, Culture study office.
- Hafiz-i Abru, A., Edited by Mayel, H., 1970. *Geography of Hafiz-i Abru* (in Persian), Tehran. Cultur. foundat. Iran.
- Hamedani, R.D. Fadlallah., Edited by Karl, J., 1989. *Geschichte Gazan khan* (in Persian), 2th edition, Isfahan, Porsesh.
- He, J.M., 2005. On the Development of Rural Tourism in China's Urban Suburbs: a case study on the evolut. *Nongj. Chengd.*, *Tourism Tribune*, 20, 6, 71-74.
- Heydari Bani, D., 1999. View of Isfahan's dovecotes, Second congress of the history of Iranian architecture and urbanism, 2th volume, Bam. *Nat. Cultur. Her. Organizat.*, 201-222.
- Holland, J., Burian, M., Dixey, L., 2003. Tourism in poor Rural Areas: Diversifying the Product and Expanding the Benefits in Rural Uganda and the Czech Republic", PPT (pro-poor tourism) Work., Paper 12.
- Ibn-e Batuta, M.I.A.I., Translated by Ali, M., 1982. *The travels of Ibn-e Batuta* (in Persian), 1th volume, 3th edition, Tehran. Sci. culture.
- Iran's 20-year vision plan., 2003. proclamation of Iran's 20-year vision plan till 2025 (in Persian), Tehran. Secretar. exped. dis. coun. Islam. republ. Iran.
- Kaempfer, E., Translated by Keykavus, J., 1981. *Amhofe despersischen grosskonigs* (in Persian). 2th edition, Tehran, Khawrazmi.
- Mahmoudiyan, M., Chitsaz, A., 2000. *Pigeon houses of Isfahan* (in Persian), Isfahan, Golha.



- Mc Intyre, G., Hetherington, A., Edward, I., 1993. Sustainable Tourism Development: Guide for Local Planner, Madrid, WTO (World Tourism Organization).
- Mirzaie, A., 2006. A comparison between the characteristic and functions at dovecotes in Iran and Britain. *J. soc. sci.*, 37, 109-139.
- Monshi Zadeh, R., 2005. About tourism (in Persian), 1th edition, Tehran, Monshi.
- Motiee langrudi, H., Nosrati, M., 2011. Tourism development in rural areas of Karganrud based on tourists opinions. *Geogr. env. plan.*, 22, 1, 69-84.
- Narshakhi, M.J., Translated by Abunaser, A.N.G., Edited by Modarres, R., 1972. The history of Bukhara (in Persian), Tehran. Cultur. foundat. Iran.
- Oppermann, M., 1996. Rural Tourism in Southern Germany. *Annal. Tour. Res.*, 23, 1, 86-102.
- Rezvani, A.A., 1999. Geography and tourism industry (in Persian), 5th edition, Tehran, Payam-e noor.
- Rogerson, C.M., 2004. Urban Tourism and Small Tourism Enterprise Development in Johannesburg, the Case of Township Tourism. *Geo J.*, 60, 3, 249-257.
- Roknaddin Eftekhari, A., Mahdavi, D., Akbari Samani, N., 2013. Presentation of a model of sustainable tourism planning in rural development strategy (case study : Lavasan- E- koochak). *Human geogr. res.*, Vol. 45, Issue 1, 123-146.
- Roknaddin Eftekhari, A., Mahdavi, D., 2006. The solution of the rural tourism development with SWOT methods (caxe study: Lavasan- E- koochak). *Modares j. human sci.*, Vol. 10, Issue 2, 1-31.
- Roknaddin Eftekhari, A., Ghaderi, E., 2002. The rule of rural tourism in rural development ( theoretical analysis). *Modares j. human sci.*, 6, 2, 23-41.
- Saghaie, M., 2004. A survey on tourism industry in Gaz seaport. Beig Mohammadi. Geography branch. Isfahan Univ.
- Seidaie, E., Dehghani, A., 2010. Tourism in rural nature. *Geogr. train.*, 25, 1, 52-57.
- Sharpley, R., Julia., Translated by Rahmat al-lah, M.Z., Nasiri, F., 2001. Rural tourism: an introduction (in Persian), Tehran, Monshi.
- Slee, B., Farr, H., Snowdon, P., 1997. The Economic Impact of Alternative Types of Rural Tourism. *Agr. Econom.*, 48, 1-3, 179-192.
- Spandl, K., 1998. Exploring the Round Houses of Doves. *Brit. Archeol. Magaz. Logo*, No. 35.
- Vincent, V.C., Tnompsone, W.T., 2002. Assessing Community Support and Sustainability for Ecotourism Development. *Travel Res.*, 41, 153-160.
- Walepole, M.J., Goodwin, H.J., 2000. Local Economic Impacts of Dragon Tourism in Indonesia. *J. Annal. Tour. Res.*, 27, 3, 559-576.
- WTO., 2003. Year Book of Tourism, London. Sage Publicat.
- Zarabi, A., Rakhshaninasab, H.R., Aqaziarati Farahi, M., 2006. development spatial planning of ecotourism in Sistan and Baluchestan province. *Art. collect. first confer. geogr.*, 21 century, Najafabad Islamic Azad univ., 469-480.
- Zarghami, E., Okhovvat, H., Azemati, H.R., 2012. Physical and structural typology of public utility constructions in rural Isfahan (case study: rural dovecote). *Hous. rur. env.*, 31, 137, 37-52.