

**UGC MAJOR RESEARCH PROJECT**

**SUMMARY OF THE STUDY**

**HERITAGE ECOLOGY IN THE UPPER  
KRISHNA BASIN OF MAHARASHTRA:  
A GEOGRAPHICAL ANALYSIS**

**UGC File No: 42-75/2013 (SR)**

**SUBMITTED TO**

**UNIVERSITY GRANTS COMMISSION  
NEW DELHI**

**BY**

**PRINCIPAL INVESTIGATOR**

**DR. K. A. MALI**

M.A., Ph.D, SET

**ASSOCIATE PROFESSOR,  
DEPARTMENT OF GEOGRAPHY,  
RAJARAM COLLEGE, KOLHAPUR.**

**OCTOBER - 2016**

**SUMMARY AND FINDINGS OF THE STUDY**

**HERITAGE ECOLOGY IN THE UPPER KRISHNA BASIN OF  
MAHARASHTRA: A GEOGRAPHICAL ANALYSIS**

**Introduction:**

The word 'heritage' is commonly used in a broad sense involving both natural and cultural landforms, and also includes the ideas, beliefs and ways of life. Heritage is our legacy from the past, what we live with today and what we pass on to future generation. Our cultural and natural heritage is both irreplaceable sources of life and inspiration. Our heritage sites tell the history; possibilities and future prospects of our existence and continuity. Heritage ecology is deeply conditioned by beliefs about our built nature and destiny and the ways to follow the path of peace, human kindness and sustainable development - that is, by religious and moral ethics, Heritage ecology helps to feel and visualize the sense of place attachment. Heritage landscape is the mirror of mankind's growth progress and prospects that must be preserved, conserved and made part of life ways. This ideology may also be taken as an environmental ethics having heritage ecology at the core. Heritage can be natural, cultural, tangible, intangible, personal or collective, Natural heritage is often conserved in place such as reserves and national parks and biodiversity, cultural heritage practice are often conserved through ongoing traditional cultural monuments and practices. This broad view of heritage is reflected in the detection adopted by UNESCO (1972) in the World Heritage Convention. The convention divides heritage in to cultural and natural heritage.

**Statement of the Problem:**

The Upper Krishna basin of South Maharashtra has glorious history as well as cultural and natural personality. The Upper Krishna basin is rich in natural and cultural heritage sites. A dynamic cultural process of convergence are at work in these different sites creating certain characteristics, institutions and patterns which simulate large number of people to converge at a particular time. Each site created its own core and influence of each center reflect inter connectedness, where a deep sense of conservation; preservation and maintenance is involved through the feeling of attachments. The natural and cultural heritage sites located in the upper Krishna basin have lot of tourism potential. These centers are playing a vital role in the tourism development of Maharashtra. But most of the heritage sites in the Upper Krishna basin are neglected. Today conservation, preservation and promotion of this heritage sites are essential for sustainable tourism development.

### **Significance of the Study and Social Relevance:**

Heritage has been explained in terms of roots and of our deep glories of the past. Heritage ecology helps to feel and visualize the sense of place attachment. Heritage sites have a natural and historical significance for the community. Heritage sites offer a richer source of environmental well being in term of deep attachment of human identity and will continuity and existence. Heritage sites have not only religious and cultural importance but also they have scientific, recreational, aesthetic, economic and sacramental values. Heritage is an economic resource for tourism development.

Natural and cultural heritage sites in the Upper Krishna basin of Maharashtra have grate historical, cultural and religious significance. Above all heritage resources have lot of tourism potential and plays significant role in the tourism development of Maharashtra. The present study is most significant to understanding of heritage ecology in the study area as well as it is also helps to development of heritage tourism in the study area. Landscape analysis of heritage sites is useful for the decision making, policy formation, and management and planning of development at heritage sites. Present study is also significant for the conservation, preservation and protection of heritage sites in the upper Krishna basin of Maharashtra. The study can be helps to safeguarding of intangible cultural heritage in the study region. It is also highlights on heritage ecology and sustainable development. The ecological awareness leads to the ethical questions of finding an inner guide for right action, right thought and sustainability. Present study is helps to the promoting cultural and heritage tourism in Maharashtra.

### **Inter Disciplinary Relevance:**

Heritage, defined as a monuments, historical buildings or sites having aesthetic, archeological, scientific, ethological or anthropological values and geological features, habitats of plants or animal species. Heritage ecology is related to Archaeology, Ancient/Cultural Astronomy, Heritage tourism, Ecology and eco – system on the earth. Combination of cultural and natural heritage is also reflected in many national inventories. Heritage covers many elements of living cultural as well as natural past. Heritage sites are significant for tourism in relation to economy of the country. Hence the present research work is related to History, Geography, Sociology, Economics, Ecology, Biology etc. Present study is most relevant for sustainable development and conservation and preservation of heritage sites.

### **Objectives:**

Main objectives of the present research work are-

1. To identify the natural and cultural heritage sites and their spatial pattern of distribution.
2. To study the role of infrastructural facilities in the development of heritage sites.
3. To study the significance of heritage sites in the development of tourism activity

4. To analyze and explain the landscape appraisal of heritage sites.
5. To highlights the issue related to the heritage ecology and sustainable development. (Conservation and Preservation of heritage site).

**Data Base and Methodology:**

Present study is mainly related to heritage sites, their spatial distribution pattern, landscape appraisal of heritage sites and heritage tourism in the upper Krishna basin of Maharashtra. Keeping in view the objectives of the present study related data and information have been collected from various sources. The present work is based on primary data as well as secondary data. Primary data is collected through intensive field work and questionnaires. Theoretical data have been collected through reference books, research papers, Govt. publications, Journals, Periodicals and different websites. Primary data have been collected on large scale through field work by employing questionnaire, interviews, photographs and schedule techniques. Remote sensing data (spatial data) IRS- R-2Geo-referenced L4FMX IMAGES also used for the study of spatial pattern of heritage sites, and landscape analysis. Addition to this Geo reference data of the selected sites have been generated by using advance navigation technology i.e. GPS (Globe Positioning System). Topographical maps on the scale of 1:50,000 have been used for basic mapping of study region.

**Methodology:**

For the present study selection of heritage sites have been made on the basis of their natural, cultural and religious importance and Sites which are mainly included in the UNESCO list. As well as in the list of heritage sites declared by the Govt. of Maharashtra and District Collector. Beside these lists some other heritage sites also selected for the present study which have cultural or natural value. Heritage ecology in the upper Krishna basin have been classified in three categories like 1. Natural heritage, 2.Cultural heritage and 3.Intangible cultural heritage.In the present research work various statistical and quantitative techniques have been adopted for analyzing data related to heritage sites. Cartographic techniques Choropleth and Isopleth methods have been used for representation of Non-spatial data. Accessibility and connectivity of heritage sites has been measure by using Route Matrix method and Relative method. Accessibility of heritage sites has been represented with maps. Landscape appraisals of heritage sites have been studied by using GIS technique and supplemented with photographs. Spatial pattern and organization of heritage site have been analyzed by using GIS techniques. Basic maps are prepared with the help of Auto CAD. SWOT analysis method is used for the study of the present condition of heritage sites.

### **Chapter wise Scheme:**

Present research work has been divided in to following chapters'

Chapter -1 Introduction, Research Methodology and Geographical setting of study region.

Chapter -2 Review of Literature

Chapter -3 Spatial Distribution of Heritage Sites

Chapter -4 Role of Infrastructural Facilities in the Development of Heritage Sites

Chapter -5 Heritage and Tourism Development

Chapter -6 Landscape Appraisal of Heritage sites.

Chapter -7 Conservation of Heritage sites and Sustainable Development.

Chapter -8 Conclusion and Suggestions

### **CONCLUSION:**

Heritage ecology in the Upper Krishna basin of Maharashtra has been classified in to three main types such as Natural heritage, Cultural heritage and Intangible cultural heritage. The Present study is an attempt to find out their spatial pattern of distribution. Radhanagari wildlife sanctuary, Chandoli national park, Koyana wildlife sanctuary and Kas Plateau these four natural heritage sites which are listed in UNESCO'S world heritage list located in the Upper Krishna basin. These sites have rich biodiversity and universal environmental value. Beside these Mahableshwar, Panchgani, Sagreshwar and Masai Plateau these natural heritage sites are also plays significant role in the heritage ecology of the study area. All these natural heritage sites are located in western hilly area with dense forest, variety of flora, fauna and rare endemic plant species. Geographical location of these sites creates natural scenery, deep valleys, mountain ranges, waterfalls, healthy cool climate. Due to this thousands of tourists attracted to these places. Locational advantage of these sites helps to develop eco- tourism in the study area. Mahableshwar and Panchgani are the famous hill stations located in the study region. They plays important role in the tourism development. Sagreshwar is the man made sanctuary located in Sangli district.

In Cultural heritage sites includes historical places and monuments, forts and caves, sacred and religious sites. Kolhapur, Satara, Sangli, Wai, Karad these are the famous historical places located in the study area. In these cities many historical monuments, buildings are found. These cultural heritage sites tell the glorious history the region. As well as they play significant role in the tourism development.

In the present research spatial distribution of cultural heritage sites have been studied. According to this fort sites are located in western hilly area. Most of the forts are built on flat topped area (locally called Sada) of Shayadri Mountain. Forts are telling us the history of the region. Many forts have natural panoramic view. Majority of the religious heritage sites are located in the plain region mainly on the bank of the Krishna River and their tributaries. Old temples at these sites have beautiful sculpture. Mahalakximi temple at

Kolhapur which is constructed in 9<sup>th</sup> century A.D it is the main attraction of Tourists visited to Kolhapur. Mahuli, Wai, Pateshwar these temples have rich sculptured but they are neglected. Ancient Buddhist caves located in western hilly area these are the legacy of our past but these beautiful caves are totally neglected.

The Upper Krishna Basin of Maharashtra has rich traditions, customs and intangible cultural heritage. Intangible cultural heritage in the study region is an important aspects in maintain cultural diversity. Intangible cultural heritage is face threats in the era of globalization. It is essential that an understanding of intangible cultural heritage of different communities. It helps to increase inter cultural dialogue and encourage initial respect for others way of life. In the present study intangible cultural heritage has been divided in to folk art, folk dance, crafts, food, cloths, festivals, traditional songs and expression. Lavani, Zimma-fugadi, Gondhal, Waghyamurli, Gaja dance, Dindi are the famous folk dance. Lezim, Dandpatta, Malkhamb, Khusti these are famous folk arts. In intangible food Kolhapuri Missal, Tambda – Pandhara (Non-Veg food), KolhapuriJaggari (Gur), SataraKandiPedha, Turmeric and Grapes of Sangli are the famous in India. KolhapuriChappal, KholapuriSaj, Hupparipayalare the famous crafts. SongiBhajan, Povada, Keertan are the oral traditions and expression. This intangible heritage ecology is the identity of the study region and famous in all over Maharashtra and India. Safeguarding this intangible cultural heritage is important to cultural manifestation as well as increasing knowledge and skills that is transmitted from one generation to another.

The infrastructural facilities are plays most significant role in the development of heritage tourism and economic development of the region. Present study has emphasis on this issue and analyzes the spatial pattern of infrastructural facilities in the study region. Transport network in the study area have been considered for the study of transport facilities. According to this in the Upper Krishna basin 252 km national highways, 2188 km state high ways, 4735 major district roads and 6119 km other district roads. Road are plays significant role in the development of heritage sites, but road facilities are not even in all taluka. Physiography of the region is affected on the road density. Taluka wise road density has been studied according to this in western hilly area road density is low and tahsil located in eastern plain region road density is high.

Accessibility of heritage sites has been studied with using relative method and route matrix method. An easy access is most important factor in the development of heritage tourism and tourist destination. According to this natural heritage sites have low accessibility because of hilly terrain.As well as fort sites have also low accessibility because of all fort sites are located on western hilly region due to this connectivity is very low. Only one or two road links connect of these forts. Considering the accessibility of religious heritage sites Jotiba, Manderdevi, Khidrapur, Chapal, Pal these sites have low accessibility. Kolhapur, Sangli, and Narsobawadi these sites are highly accessible. It reveals that heritage sites

located in western hilly area have low accessibility and heritage sites located in plain river valley area having high accessibility.

Accommodation is one of the basic facilities for the development of heritage sites as well as heritage tourism. Present study is focused on the accommodation and other facilities available at major heritage sites. Accommodation provides the psychological base for tourist during their stay away from home. Analysis of accommodation facilities at major heritage sites reveals that Kolhapur, Mahableshwar, Panchgani, Satara, Sangli, Wai these heritage sites have good accommodation facilities. On the other hand fort sites except Panhala accommodation facilities are very low. Jotiba, Khidrapur, Chafal, Pal, Pusegaon at these religious places accommodation facilities are very poor. As well as at natural heritage sites like Radhanagari, Chandoli, Koyna, Sagreshwar accommodation facilities are poor.

Restaurant, Telephone, Internet, Drinking water, Toilet, Hospitals, Guide, Entertainment these other infrastructural facilities are also most significant in the development of heritage tourism. Availability of these other facilities are studied, according to this at Mahableshwar, Panchgani, Wai, Satara, Sangli, Kolhapur, Panhala, Narsobawadi these facilities are excellent to good. But at wildlife sanctuaries, fort sites and religious sites located in interior part having facilities are moderate to poor. Vishalgad, Rangana, Pargad, Sammangad, and Bhudargad these forts located in Kolhapur district which have historical significance and good natural scenery but due to the lack of infrastructural facilities and low connectivity these fort sites are not developed.

Heritage sites and development of heritage tourism in the Upper Krishna basin have been studied in chapter V. Heritage tourism is related to natural and cultural sites to understand our past. Cultural heritage tourism is the fastest growing segment because of it has a positive economic and social impact. It provides benefits to host population and helps to preserve heritage sites. Heritage tourism attributed to historical events and facts. Natural and Cultural heritage resources in the study area have lot of tourism potential. Understanding of significance of heritage is most essential for tourism development in the study area. Indigenous heritage; indigenous people are the primary sources of information about the significance of place.

Natural heritage sites located in the study region, they have universal heritage value. These sites have rich bio-diversity and geo-diversity. The significance of these sites has been considered in the context of local, regional and national level. Wildlife sanctuaries are full of bio- diversity hot spots; understanding of the significance of these sites is most essential for development of heritage tourism. Forts, palaces, historical buildings, monuments they have also historical significance. Old ancient temples, caves have archeological, cultural and religious significance. Understanding of heritage significance helps to develop tourism activity in the Upper Krishna Basin of Maharashtra. Another one important context is conservation and protection of heritage sites; it is related to responsible tourism or sustainable

tourism. Marketing and promotion of heritage places need to recognize and respect their significance and successful heritage tourism. Involvement of corporate sector and local people has been supported to increase heritage tourism in the study area. In the present study discussed some strategy for the development of heritage tourism such as-

- . To find out and identify heritage resources for tourism development.
- Integration of heritage and cultural resources in to main stream of tourism
- To develop an action plan for provides basic infrastructural facilities at heritage sites.
- . Provide an opportunity for profiling and promotion of heritage sites and market for heritage products.
- To make the strategy for creation of opportunities for the neglected heritage sites.
- Analyze the socio- economic and environmental impact of Tourism.
- To increase the awareness of conservation and protection of heritage for sustainable tourism development.

In the present study SWOT analysis method is used to understand the Strength, Weakness, Opportunities and Threats of heritage sites. Heritage sites located in study region have lot of tourism potential but it is essential to understand and find out this potential and its use for tourism development. Natural heritage sites (wildlife sanctuaries) located in the study area have lot of tourism potential but these sites have some weakness like low connectivity and accessibility due to hilly terrain. Beside this weakness they have maximum opportunities. Using the locational advantages we should develop boating; tracking, nature interpretation, centers, adventure, forest safari at natural heritage sites. These facilities should be helpful to increase tourism activity in the study region.

There are many religious heritage sites which have beautiful sculpture as well as religious importance they have lot of tourism potential but due to the lack of infrastructural facilities they are neglected. It is essential that to provide basic infrastructural facilities, increasing connectivity by good roads it may be helps to increase tourism at these places. Mainly Khidrapur, Mahuli these two heritage sites have beautiful temples complex with beautiful sculptures but due to the lack of infrastructural facilities these sites are neglected. Like this historical forts have also lot of tourism potential but due to the low accessibility and poor basic infrastructural facilities most of the fort sites are neglected. Geographical location of fort sites has provides lot of potential for tourism development such as natural scenery and historical significances. These opportunities are available for the development of heritage tourism.

Landslide, flood, forest fire, crowd, heavy rainfall this type of threats are found at some heritage sites; beside these threats there is a lot of tourism potential at these site. This



potential should be found and use for tourism development. MTDC has been take to priority to development of tourists destination like Radhanagari, Chandoli, Koyna wildlife sanctuaries as well as at Kas plateau and Sagreshwar, some fort sites and religious site. Government of Maharashtra and MTDC should be given priority for development of tourism activity.

Landscape appraisal of heritage sites is one of the objectives of present study. Landscape is about the relationship between people and place, it is dynamic phenomena that changes as a result of both natural and human induced causes of human activities. There are two types of landscapes, natural and cultural. Landscape appraisal means the process of applying set criteria to a particular landscape or landscape feature. Study of landscape appraisal is related to landscape character, landscape condition, landscape value and landscape sensitivity. Study of Landscape appraisal is useful to understand basic pattern of landscape features and how future development should related to them. Landscape appraisal study is the designation of relative values to landscape.

For the study of landscape appraisal of heritage sites in the study area selected four natural and four cultural sites which have heritage significance. Natural heritage sites in the Upper Krishna basin embrace the combination and interrelationship of landforms, habitat, wildlife, forest and their capacity to provide enjoyment and inspiration. It therefore encompasses both physical attributes and aesthetic values given the long interaction between man and nature. Natural heritage sites namely Radhanagari wildlife sanctuary, Chandoli national Park, Koyna wildlife sanctuary and Kas Plateau are selected for landscape appraisal study.

Landscape character studied with reference to topography, slope, drainage pattern, landuse and landcover, settlements and other cultural aspects. According to this Radhanagari wildlife sanctuary which is covered 428 sq.km area out of this 351.56 sq.km actual sanctuary area and 71 sq.km. is private agricultural land and settlements. As per analysis of site 65.6 sq.km area is hilly and mountains having above 900 meter elevation. Near about 75% area of the sanctuary is hilly in nature and average height is 600 to 900 meter from msl. Slope of the sanctuaries area is moderate to steep ( $10^0$  to  $30^0$ ). Drainage pattern is dendrites type. The Bhogavati and the Dhudhganga and the Kallama are the main rivers flowing in this area. Mountain spur in the middle part of the sanctuary is the main water divider.

Radhanagari wildlife sanctuary is famous for bison and other wild animals. Classification of landuse shows that 26128 hector area of the sanctuary is covered by dense forest, 4647 hector by water bodies and 6600 hector area is covered by open scrub with grass land. Landuse and land cover of this heritage site is favorable for variety of wild animals, birds. 66 types of butterflies are found in this sanctuaries area. Classification of cultural aspects shows that near about 2672 hector area is used for agricultural purpose. There are 27 scattered settlements are located in this area. Radhanagari is only one big settlement in the

sanctuary area. State highway no 116 Kolhapur to Sawantwadi pass through in this sanctuary area.

Assessment of landscape characters of Chandoli national park indicate that, Chandoli national park is located in western hilly area and covered by 317.67 sq. km area. According to the analysis of landscape characters minimum height is 286 meter and maximum is 1107 meter. As per the classification of elevation 215 sq.km (67%) area have above 800 meter height and 58.56 sq.km (18.27%) area having 600 to 700 meter height. Western part of the sanctuary has more than 900 meter height. Undulating terrain is the main character of this sanctuary. Slope of land is  $5^{\circ}$  to  $30^{\circ}$  which is moderate to steep. Mainly western part of sanctuary is very steep. Warana is the main river in this area, Warana and other streams creates dendrites drainage system. Chandoli dam is constructed on main stream. Assessment of land uses shows that 5124 hector dense forest and 14628 hector open forest and 8150 hector area is open scrub with grassland. In Chandoli national park cultural aspects are not dominant only small forest roads and few small settlements are seen. But Chandoli national park has rich biodiversity. This forest area is reserved for tigers.

Landscape character assessment of Koyna wildlife sanctuary indicates that hilly terrain, steep slope; deep valleys and long lateritic plateau are the main topographic characters. This sanctuary covers 423.55 sq.km area with average elevation is 600 to 900 meter height. Western part of the sanctuary has maximum height and middle part have minimum height (600 to 700 meter). Middle part of the sanctuary is drained by the Koyna River. Both sides of the sanctuary are bounded by high mountain ranges and middle valley is occupied by Koyna water reservoir. Longitudinal spurs runs towards west to east and creates steep slope and undulating topography. Average slope of the area is  $10^{\circ}$  to  $30^{\circ}$  it is moderate steep to very steep. Steep slope and heavy rainfall creates rapids and water fall these are the main geomorphic features in the sanctuary. Koyna is the major stream drained this area and Koyna dam is constructed on the main stream. This sanctuary area is covered by dense forest near about 22715 hector area covered with dense forest. 6055 hector area covered by water bodies and 10226 hector area is under open scrub with grass. Koyna wildlife sanctuary is famous for its rich biodiversity, it is reserved for tiger. Variety of flora and fauna found is the main characteristics of this sanctuary. In cultural aspects Koyna dam, Nehru garden, Koynanagar, Vasota fort these are the important aspects. In the interior area some small settlements and agricultural fields are found.

Kas plateau of flowers is famous natural heritage site located in Western Ghat of Maharashtra. Kas is a flat topped rocky lateritic plateau locally called as Sada. Geomorphic characteristics of Kas plateau are favorable for growing herbaceous ephemeral plant species. Elevation of this plateau is 1000 to 1200 meter from msl and total area is 1792 hector. Slope in between  $5^{\circ}$  to  $20^{\circ}$  indicates gentle to moderately steep. This plateau is covered by 42% dense forest and 34% area of the plateau is open scrub with grassland. Kas has been

recognized as one of the hot spot of biodiversity because of the unique ecosystem and high degree of endemism. More than 450 species of wild flowers bloom, endemic herbs are found on this plateau. Different types of frog, snakes, and reptiles are also found on the Kas plateau.

Appraisal of landscape condition is studied to identify the strength and the sense of place. This can be used in landscape strategies as part of future work. Land scape condition of selected heritage sites have been assessed as excellent, good, moderate and poor depending on the intactness of the fundamental landscape pattern. To study the condition of the landscape considered natural aspects like altitude, topography, forest cover, water bodies, drainage pattern, slope, biodiversity, scenic quality.

According to researchers view, experts opinion about the landscape condition it reveals that the Radhanagari, Chandoli, Koyna wildlife sanctuaries and Kas plateau all these heritage sites are located in western hilly area, average height of the Western Ghats is 600 to 1200 meter, which is good in manner. This western hilly area received maximum rainfall and it is source region of major rivers flowing towards the Krishna River. Mountain ranges with steep slope creates different geomorphic features e.g. cliffs, rapids, waterfalls. Forest cover and bio-diversity of all these sites is excellent, height and topography of the all these heritage sites created panoramic view of nature hence natural scenery is good. Kas plateau is unique in the region in flowering season (August and September) it is covered by different colorful flowers and herbs. It reveals that over all condition of natural aspects in these four heritage sites is excellent to good in manner.

Appraisal of landscape sensitivity indicates the degree to which a particular landscape character type can accommodate change without detrimental effects on character. The main objective of this study of landscape sensitivity is to identify and demarked the sensitive zone or area of the selected heritage sites. According to expert view and report of forest department sensitive zone maps have been prepared for all the four heritage sites. It reveals that in Radhanagari sanctuary 135 sq.km area is highly sensitive, 138.39 sq.km area is moderately sensitive and 107.56 sq. km area is low sensitive. In Koyna wildlife sanctuary area 351 sq km area is high sensitive, 4.87 sq.km areas is moderately sensitive and 6.96 sq. km area is low sensitive. In Chandoli national park 267.3 sq.km area is highly sensitive and 1.35 sq.km is low sensitive. 100% area of Kas plateau is highly sensitive.

Landscape value of the selected natural heritage sites have been assessed with the help of visual manifestation and expert's opinion. It reveals that all these four heritage sites have ecological, scenic, aesthetic and heritage value is high. Due to this all these four sites are listed in UNESCO'S heritage list. In this regards uniqueness and rarity of Radhanagari, Chandoli, Koyna heritage sites have moderate value and Kas plateau have high value. Kas is unique landscape in the study area.

For the study of landscape appraisals of cultural heritage sites have been selected four cultural heritage sites. For this study two fort sites namely Panhala and Pratapgad and two

religious sites namely Mahuli and Khidrapur have been selected as per their location. Landscape characters of selected cultural heritage sites have been assessed. The assessment is made on the basis of locational, cultural and panoramic view of each site. Landscape analysis of cultural heritage sites indicates that natural components like height, topography, forest and natural scenery are excellent too good at Pratapgad and Panhala but water bodies at both sites are poor. Panoramic views of both fort sites have excellent. At Mahuli and Khidrapur height, topography, forest, natural scenery is moderate to poor.

As per the analysis of cultural components at Pratapgad and Panhala historical significance is excellent but connectivity is moderate, architecture and sculpture is also moderate. Tourist amenities are moderate at Pratapgad and good at Panhala. At Mahuli cultural components are good to moderate but tourists' amenities are poor and number of visitors is poor. Khidrapur have excellent architecture of sculpture but connectivity is moderate, tourist amenities are moderate, numbers of visitors are poor. Numerical analysis and composite index landscape characters of cultural heritage sites have been shows that natural components are excellent at Pratapgad and good at Panhala and Mahuli, moderate at Khidrapur. Cultural components are good at Pratapgad, Panhala and Mahuli. The study of landscape appraisal is helpful to landscape management, landscape maintenance, conservation, protection and planning of development. Present study is useful for making the tourism policy and conservation, protection and management of selected heritage sites.

Conservation and protection of heritage and sustainable development have been discussed in chapter VII. There are many reasons for conservation and protection of heritage. The reasons may be aesthetic, economic, historical, ethical, environmental, legal as well as personal. Every community of each country may want to protect, conserve heritage because of heritage are links with our past. They are special monuments in lives; history and culture. Heritage sites have special locational identity which is useful to economy of the region. Heritage sites have natural and cultural values and these are handover to next generation in good condition. Some heritage sites have social, spiritual and ethical importance hence the protection and conservation of these sites are obligated.

Heritage sites are important to current and future generation; considering this view all communities, people, stakeholders, government authorities, and government institutions may be participate in the conservation and protection of heritage sites. For the conservation of heritage it is important that to understand the significance of site (place); involvement of people in the action decisions. It is essential to develop conservation plan and policies as per objectives and adopt appropriate conservation process. In the process of heritage conservation monitoring, evaluation and review of conservation plan are important activities. For the heritage conservation plan includes. Some states like raising awareness in the people, Participation of NGO'S and local people, collecting funds for conservation programmers.

Conservation of natural and cultural heritage sites located in the study area is most significant for sustainable development. Conservation of wildlife sanctuaries in the study area is mainly part of forest department because all these heritage sites are under the control of forest department of Kolhapur division. Forest department has made the different plans for the conservation and protection of wildlife sanctuaries. Corridor of Koyna wildlife and Chandoli national park is reserve for tiger. Radhanagari wildlife sanctuary is reserve for Bison. All these sanctuaries and Kas plateau are the part of Western Ghats. According to Madhavrao Gadgil and Dr. Kasturirangan report, Western Ghats is declared as an eco-sensitive zone in May – 2012. As per the report the biologically rich areas are considered to be an eco-sensitive zone. Radhanagri wildlife sanctuary, Chandoli national park, Koyna wildlife sanctuary, Kas plateau, Mahableshwar these sites and 2 km buffer zone has declared as an eco-sensitive zone. These areas would be restricted for activities like mining; energy projects, big constructions or development of township. Today increasing trend of eco tourism, encroachment of mining, illegal forest cutting and hunting these sites are facing many environmental problems. Day to day increased the conflict between man and wild animal; pollution and garbage problem are found because of this the conservation and protection of these natural heritage sites is become essential. There are many sites of sacred groves in the study area and these sites are plays important role in the heritage ecology. Sacred groves are tracts of virgin forest with rich biodiversity. Sacred groves are related to cultural and religious beliefs, deities of local people. Sacred groves act as an ideal center for biodiversity conservation. Due to the human encroachment, like development activities, increasing population sacred groves are endangered. There holistic understanding of the current status structure and function it is essential for assessing their ecological role and formulating strategies for their conservation.

Conservation of cultural heritage involves protection and restoration of heritage sites. For conservation to divide appropriate conservative strategy and apply their professional expertise accordingly they must take in to account views of stakeholders, the value and meaning of work. Community participation is also important for heritage conservation. Awareness of conservation in the local people and tourist should be essential for conservation of heritage for sustainable development.

In the present study there are different problems are found at forts sites and religious sites. Cultural heritage sites in the study region are under the control of different authority's e.g. some sites are under control of central and state archeological department. Heritage sites located in big cities are under control of local government like District Collector and Municipal Corporation; some religious sites are under supervision of public trust and private owner's. Conservation, preservation and restoration activities at different heritage sites have been done by related authority. Heritage sites which are under control of archeological department conservation and restoration work is done by this department. There are many

problems and limitation are found in the conservation of heritage sites mainly limited funds, lack of human resources, negligence of government officers etc. Local people and NGO'S must take lead to cleanness and protection of these forts and caves to development of sustainable tourism. On fort sites civic amenities and other infrastructural facilities are very low. Connectivity of forts sites should be increase. All forts should be connected by good tar road.

The folk dance, folk art, folk music, traditional musical instruments, traditional food and cloths, festivals are the intangible cultural heritage in study area. In the modern period the impact of globalization and urbanization is shown on these traditional cultural intangible heritages. New generation has new modern ways of entertainment because of this the folk arts, dance, music and other cultural heritage is likely to be lost. Intangible cultural heritage is our legacy and we have to preserve them. The society has come forward to protect these cultural activities and arts. For safeguarding intangible cultural heritage we have to take following measures.

- The government has to support folk art, folk dance and music safeguarding and promotion for these established Lok-Kalakendra (folk art centers)
- To establishment of training centers for folk arts and music.
- The university level to start the subjects related to folk art and folk dance, music.
- To organize the university level completions among the college students performing folk art, folk dance.
- Organization of cultural festivals at village level it is helpful to preserve the rich cultural activities.
- The folk arts developed by wandering people are about to die, to protect these arts give the economic support to these people.
- The helping hands from the government and public institutions, NGO'S is very essential to protect, preserve and retain our grate intangible heritage.
- To the promotion of Kolhapur Gur (Jaggary) KolhapuriChappal, Jewelry, Non-Veg food, KolhapuriMisal, and other things cultural festivals should be arranged.

#### **SUGGESTIONS:**

Present research work is mainly emphasis on the study of heritage ecology in the Upper Krishna Basin of Maharashtra. The heritage ecology is studied in a holistic manner. Considering the main objectives of the study and analyzing the facts researcher have been made some suggestions.

1. In the Upper Krishna basin most of the natural and cultural heritage sites are located in the western hilly region. Due to the undulating topography accessibility of the sites is moderate to low. Transport facilities are plays vital role in the development any the region. Natural heritage sites namely Radhanagari Wildlife Sanctuary, Chandoli

National Park, Koyna Wildlife Sanctuary, Kas plateau have rich biodiversity and ecological significance. These sites have lot of tourism potential but lack of transport and other facilities there are limitation in the development of ecotourism. Many historical forts are also located on the mountain ranges they have also lot of tourism potential, but accessibility of these forts is low. For the development of heritage tourism in the study region it is essential that all these natural and cultural heritage sites should be connected by good roads.

Transport Facilities: For the development of heritage tourism it is essential that to provide good transport facilities. Researcher has suggested following roads should be converting into 4 lanes.

- 1) Kolhapur to Gargoti
- 2) Kolhapur to Gaganbavada
- 3) Kolhapur to Radhanagari
- 4) Satara to Phaltan
- 5) Karad to Koyananagar
- 6) Sangali to Chandoli etc.

Other state highways and district roads should be explained and made in good condition.

2. Accommodation and other infrastructural facilities like good drinking water, toilets, local transport, restaurant, entertainment, telephone, internet, medical, travel agents and guide are must be required for the tourism development. This types of basic facilities are not sufficient at many heritage sites. There are limitations to development of eco - tourism because of unavailability of accommodation and other facilities at natural heritage sites (Wildlife Sanctuaries). Except Panhala fort at other fort sites located in the study area above basic facilities are not available. Like this basic facilities are not sufficient at many religious sites namely Jotiba, Khidrapur, Pali, Mandardevi, Chaphal, Pateshwar, Yewateshwar. For the development of heritage tourism it is essential to made available these facilities at natural and cultural heritage sites.
3. For the development of heritage tourism in the study region government of Maharashtra should be give priority to implemented tourism action plan and provide following facilities at tourist destinations.
  - Made availability of basic infrastructural facilities at heritage sites mainly at fort sites.
  - To increase the accessibility of tourist destinations.

- Made the rules and regulations for tourist and visitors and strictly implement at natural heritage sites and at fort sites.
- Provide recreation facilities at tourism destinations
- Made the plans for heritage conservation and provide the sufficient funds to protection and conservation of heritage sites.
- Promote the significance of heritage and give the publicity for tourism development.
- Promote and give the status for intangible cultural heritage.
- Publish and provide the information of heritage sites.
- Provide the sufficient parking facility where the parking problem is created.

Above suggestion should be considered for the development of heritage tourism in the study area.

#### 4. **Researcher has suggested some project plans for tourism development in the study area.**

- **Audio – Visual Shows:** - In this project plan suggested the beautification and lighting of sites, operation of audio visual shows giving the information of the site especially on historical fort sites and narrating the history of fort and temples, major attraction and significant events etc. For this action plan amphitheatre, light effects, sound effects, folk shows these components are essential. Ideal location for such shows would be monuments of historical importance especially forts of Shivaji Maharaj and other heritage sites. Following sites are suggested for this project.

Fort Sites like Panahala, Vishalgad, Bhudargad, Pargad and Samangad in Kolhapur district, Pratapgad, Ajinktara, Sajjangad in Satara district and other heritage sites like Kolhapur, Satara cities which have historical significance. Many important heritage buildings, palaces, temples are found in the cities. Implementation of Audio – Visual shows narrating the historical significance and events helps to the tourism development in these cities and fort sites. Such types of shows are useful to earned revenues and it will be utilized in restoration activities of the historical monuments

- **Entertainment Parks:**

Different type of entertainment facilities would be provided to tourist. Like different type of rides, restaurants, food stalls, toy souvenir shops etc. the visitor will pay an entry charges to the park. Toilet and parking facilities will be essential near these parks. Following locations are suggested for this type of project.

Narsobawadi, Kolhapur (Rankala), Bhudargad fort.



Sangli, Shirala, Tasgaon in Sangli district. Satara, Karad, Aundha, Wai, Mahableshwar, Panchgani, Pusegaon in Satara district.

Above all places this type of Entertainment Park projects should be implemented for tourism development.

- **Science Park (Planetarium) :-**  
 These types of parks are useful for study tour of schools and colleges. Panhala in Kolhapur district is very good site for this science park. Like this Ajinkyatara in Satara also best site for this type of park. Researcher also suggested Chh. ShahuSoci- Cultural center and Science Park at Shahu Mill area in Kolhapur city. These types of facilities should be made available for tourism development.
- **Convention Center:-**  
 The centers suggested for providing a place for corporate meetings, training programmes, seminar etc. For this conference hall, Restaurant, accommodation internet these facilities are required. This type of centers will be developed at hill stations like Panhala, Amboli, Panchgani, Mahableshwar etc. These convention centers are supported to tourism development.
- **Forest Safari :-**  
 To watching natural scenery of forest area as well as animal life this types of forest safari facilities are most useful for tourism development. For this open jeeps and guide facilities are required this type of forest safari has suggested at Radhanagari and Koyana Wildlife Sanctuaries, Chandgad and Gaganbavada as well as at Chandoli. Today this type of facility is available at Amba forest area.
- **Lake Water Sports:-** This type sports are very important for tourism development. Researcher Suggested lake Water sports and boating at following sites :  
 Rankala (Kolhapur),Khidrapur,Narsobawadi, Radhanagari and Koyana Dam, Venna Lake at Mahableshwar this type of facilities is available. Boating facility will be provided from Narsobawadi to Khidrapur and Karad to Audumbar this type of boating in the Krishna River is the best attraction of tourist.
- **Health Resorts:-**  
 Today Ayurvedic and nature therapy are famous at tourists centers. This is known as health tourism. In the study area there are many sites having good climate and beautiful natural scenery. Health resort and club facilities are attracted tourist. Researcher suggested this type of facilities will be provided at Radhanagari, Gaganbavada, Pargad, Amboli, Koyana, Panchgani, and Mahableshwar.
- **Non Star Accommodation facilities:-**  
 This type of accommodation facilities is essential for middle class and domestic tourists. In the study area there are many heritage sites which have

rich natural scenery, biodiversity, historical significance but they have lack of accommodation facilities. Medium rented accommodation facilities are most essential for domestic tourism development. This type of facilities will be provided at fort sites like Bhudargad, Pargad, Samangad, Vishalgad, Pratapgad etc. as well as at religious heritage sites like Pali, Chafal, Aundh, Sagreshwar, Jotiba, Khidrapur, Bhaubali, Pateshwar.

- **RopeWays:-**

The view of the landscape from sky lift (Ropeways) is seen very beautiful. This concept of rope way will be increase the attraction of tourists. Project of rope way has suggested in between Jotiba and Panhala sites. These facilities are also suggested at Vishalgad, Pargad, Sajjangad, Ajinkyntara.

- **Bio – Diversity interpretation Centers**

Bio – Diversity interpretation Centers should be established at Radhanagari, Chandoli, and Koyana Wildlife sanctuary. These heritage sites are the bio-diversity hot-spots, gallery of bio-diversity interpretation should be formed to provide information about different flora and fauna of Western Ghat and to make people aware about the significance of bio-diversity. It is useful for students of schools, colleges, visited these sites. It is essential to growth of eco -tourism.

- **ChhatrapatiShahu Social and Cultural Center**

Chha.Shahu Social and Cultural Center is essential at Kolhapur. This center should be created in Shahu mill area which will take a review of history and socio – cultural work of ChhatrapatiShahuMaharaj. This type of center should be creating at Satara City which will take the review of history of Shivaji Maharaja.

- **Guide Service and Suitable tourist guide book**

Guide service and suitable tourist guide book should be provided at historical heritage sites. In the study region there are many historical forts, palaces, temples, museums but proper guide service is not available anywhere. It is essential to tell proper history of place and provide knowledge to tourists. Trained guides and suitable guide books should be provide at tourist destinations.

- **Cultural Festivals:-**

It is essential to organize cultural programmes, art and craft festivals for the conservation of intangible cultural heritage, as well as tourism development in the study region. Kolhapur festival, Satara festival, Programmes on folk dance, folk art, music this type of festivals and programmes should be promoted to tourism in the study area.

- **Buddhist Cave Tourism:-**

Masai, Pohale, Palsambhe these Buddhist caves in Kolhapur district, Agashiv and Jakhinwadi caves near Karad in Satara district are important ancient caves with beautiful sculpture lies in the study area. But all these caves are located interior part away from highways hence accessibility is not good. Due to this these caves are neglected. For the development of heritage tourism should be increase accessibility as well as publicity of the caves. These caves can be cleaned and repaired. Basic civic amenities will be provided. These caves have significant tourism potential it must be used for heritage tourism development.

- **Adventure Sport centers: -**

Gaganbavada, Panhala, Pachagani, Mahableshwar, Ajinktara and many other hill sites have significant locational advantages for the development of adventure sports. Development of adventure sport centers should be essential for tourism development.

- **Boards and Signage:-**

Historical forts, site of ancient temples, and wildlife sanctuaries are located in Western Ghats section. Tourists are unknown about route, to visit these sites boards and signage facilities should be provided on the road side. It helps tourists to rich at destination.

- **Art and Craft Center:**

Kolhapur is known as Kalapur. It is famous for KolhapuriChappal, Kolhapuri Feta, KolhapuriJaggary, Sangli is famous for turmeric and grapes, and Mahableshwar is famous for strawberry. Marketing facilities of local goods at these places helps to develop tourism in the study region. Tourist should be perches these goods in proper price. Art and craft centers should be helps to development of tourism.

- **Trekking routes-** Development of trekking routes may be support to tourism development. Following trekking routes should be proposed-

1 Koynanager to Bhiravgad, Koynanager to JangaliJaygad, Panhala to Pawankind, Makarandgad to Pratapgad, Walmiki (Paneri) to Pandharpani, Raghuveer to Morani, Raghuveerghat to Mahimgad etc.

- **Youth Hostels and Dormitories:-** Accommodation facilities should be provide for the visiting school, college students for the education purpose as like youth hostels or Dormitories with necessary toilet, bathrooms and canteen at near wildlife sanctuary and near historical fort sites.

**5. Some Suggestions for the Conservation and Protection of Heritage Sites in the Study region:**

Conservation and protection of natural and cultural heritage sites is most essential because of their aesthetic, economic, historical, ethical, environmental, social and religious importance. Today many heritage sites are facing different problems. In the present study researcher has made some suggestions for the conservation and protection of heritage sites for sustainable development.

- Radhanagari, Chandoli, Koyna, Sagreshwar, Kas these are the famous natural heritage sites in the study area. These sites have been developed in to nature tourist centers. Because of increasing in number of visitors the many environmental problems are crop up e.g. the over use of plastic, noise of vehicles, air pollution, least care of wildlife, misbehavior of teenagers etc. All these problems effects on wildlife. To protect flora and fauna of these sanctuaries should be made strict rules and regulation for tourists visited to these sites. For the sustainable eco-tourism misbehave of tourist and pollution must be controlled and avoided. The core sensitive zone must be restricted from any entrance of visitors. It is to be decided very strictly and firmly up to what extent the people can go deep inside the forest. So we have to develop sustainable ecotourism.
- The villages that come in the sanctuary area have to be shifted away from the sanctuary so that the conflict between man and wild animals will be brought to zero.
- The wild animals and endangered species were hunted with the help of local villagers near the sanctuaries by the poachers. The valuable medicinal plant species, trees were cut down for selfish motives causing harms to the flora and fauna of the woods, and reducing the number of wild animals.
- For the protection and development of sanctuaries government should be provide sufficient staff as well as patrolling vehicles for forest department.

**6 To Protection of Kas plateau Some Suggestion:**

Kas plateau is listed in world heritage site it is essential to take care of this heritage site. To protect the rare plant species, animals and birds forest grads should be appointed on the Kas in flowery season.

- Ban or control on Vehicle on the plateau. Restriction and check on forest cutting, animal rearing on the plateau.
- To make the ban on use of plastic bag and other like wine bottles, west food, plastic bottles etc. Kas plateau should be made reserved and eco- sensitive zone. Ban on the misbehavior plucking plants careless parking on Kas plateau

and create environmental awareness among tourists with the help of sign boards.

- The ban on new construction like resorts; hotels on Kas should be made because it is very dangerous to biodiversity.
- Kas plateau should be made the national park and information center. In the flowering season lot of tourist visited this plateau mainly on Saturday and Sunday. Due to this over crowded of tourists creates many problems hence there should be restriction on lot of tourists visited on a day. On line registration for visiting Kas may be implemented.
- A conservation management plans for protection of wildlife sanctuaries and Kas plateau is being prepared by forest department with the help of researcher, conservationist, environmentalist, and experts in the field. The plan comprise of designing protection measure, eco-tourism, awareness of tourists and local people, identifying sensitive areas and giving special protection of flora and fauna at these sites.

7. Conservation of cultural heritage involves protection and restoration with using any method that proves effective in keeping that property in as close to its original condition as possible for as long possible. For conservation to decide up on appropriate conservative strategy and apply their professional expertise accordingly they must take in to account views of stake holders, the value and meaning of the work. Community participation is also process of heritage conservation. Awareness of conservation in the local people and tourists should be essential for the conservation of heritage for sustainable development.

- Agashiv and Jakhinwadi caves near Karad, Pohale, PandavDara and MasaiPathar near Kolhapur and caves in Giriling hills in Sangali district these are famous ancient Buddhist caves located in the Upper Krishna basin of Maharashtra. All these caves are under control of the archeological survey of India and State Government. These caves are tells the ancient history of Kolhapur and Satara district. These caves are our cultural and religious glories, but they are totally neglected by the government and archeological department. The conservation and development of these cave sites will boost of tourism in Kolhapur and Satara district. Conservation and development of these Buddhists caves should be essential for the development of heritage tourism. Increasing connectivity by good roads, providing infrastructural

facilities and civic amenities and making publicity of these sites shall be helped the development of these sites.

- Ancient temples and historical monuments in the study region are facing many problems, some of them are neglected. Surrounding area of many temples is unclean and full of garbage, many temples have not basic amenities and some of them are in depleted state. Conservation of these sites the government and archeological department has to pay special attention and provide basic facilities as well as restoration work should be take in hand. Local people and NGOs should be take cleanliness activity in a hand.
  - Historical forts located in the study region facing many problems. The bastions and walls of the forts are tumbledown. The tree grows on the wall and bastion causing to damage structure. Old buildings and monuments on the forts are damaged and neglected. Visitors and tourists creates garbage on the forts, plastic pollution is serious problem seen on every fort site. All these problems are seen at Bhudargad, Samangad, Pargad, Rangana, Mchindragad, Pratapgad, Panhala, Vishalgad and other all forts. It is need to time the conservation and protection of these forts, old buildings and monuments on the forts. Government, archeological department, local people and NGO's should take initiative to conservation and preservation program. Government and Archeological department should be repair and maintain these forts. As well as at many fort sites basic facilities are not available. Government should take initiative to provide the basic facilities at fort sites. Local people and NGO's must take lead to the cleanliness and protection activities. It is essential to stop the misuse of fort sites by visitors, for this made strict rules and regulation for visitors and tourist.
8. Safeguarding of intangible cultural heritage is most significant to cultural manifestation as well as increasing knowledge and skill that is transmitted from one generation to another. It is also important to development of cultural heritage tourism. In the study region there are various intangible cultural heritages e.g. folk dance, folk arts, folk music, traditions, festivals, food and cloths. Today due to the period of globalization and urbanization we find many intangible heritages missing their identities. Many of them are in survival stage. So that it is essential to protect and preserve them. For the safeguarding intangible cultural heritage government should take initiative and made some action plans to support and protect them. For the

protection of folk art, folk dance, folk music and other Maharashtra government should establish Lok Kala Kendra (folk art centers) at tourist centers like Kolhapur, Satara, Sangli, Mahabaleshwar, Panchgani etc. this types of cultural centers are helps to develop tourism activity. Like this government should organize the cultural festivals for supporting to protection of intangible heritage. Colleges and Universities have been organizing Youth Festivals for supporting folk art, dance and other intangible heritage. The helping hand of government is very essential to protect art and artists as well as preserve and retain the great cultural intangible heritage in the study area.

**DR. K. A. MALI**

PRINCIPAL INVESTIGATOR  
ASSOCIATE PROFESSOR,  
DEPARTMENT OF GEOGRAPHY,  
RAJARAM COLLEGE, KOLHAPUR.