A Comparative Study of Conservation Strategies of Two Selected National Parks from Pakistan & Thailand: Lessons learned from each other

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Abstract

The conservation strategies of two national parks i.e., Chiltan Hazarganji of Pakistan and Kaeng Krachan of Thailand were compared in this study. It was found that that Kaeng Krachan national park has much better "Zoning schemes" conservation strategies than Chiltan Hazarganji national park. However, the "trophy hunting" and community involvement of Chiltan Hazarganji were also important for conservation of Chiltan Markhor. The best conservation strategies of Kaeng Krachan national park may be attributed not only to awareness of the Thai people about biodiversity conservation but also the strong political will of Thailand's government to promote tourism industry of the country. The study therefore recommends the exchange of information on natural resources conservation between the two countries.

Keywords: Chiltan Hazarganji national park; Zoning schemes; Kaeng Krachan national park; Trophy hunting; Natural resources conservation

Introduction

The two national parks i.e., Chiltan Hazarganji of Pakistan (CHNP) and Kaeng Krachan (KKNP) of Thailand were selected for comparison in this study because they were established in 1980 and 1981, respectively. The major purpose of establishment of national parks is to preserve species diversity in its natural state for public education and enjoyment (ICEM, 2003). The general information of the two selected parks is summarized in table 1. According to Shafique and Barkati (2002), Balochistan is home to the Chiltan wild goat (*Capra falconeri chiltanensis*), declared as "protected mammals" in 1980. The international union for conservation of nature (IUCN) red list of threatened animals (IUCN, 1996) includes four wild goat species, one of which is Chiltan Markhor (Glenn, 2006). The CHNP was made for the

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protection of this endangered specie. CHNP was declared as "State Forest" in 1990 with an aim that the natural resources of the area should be protected from overexploitation. The CHNP, was made for the protection of Chiltan wild goat (*Capra falconeri chiltanensis*), whereas KKNP was established for serving a purpose as other national parks in Thailand's protected areas system. In 2005, KKNP was submitted to the United Nations Educational and Scientific Organizations (UNESCO) for consideration as a future world heritage site. Major threat of Markhor poaching is for its tender flesh as a food and long horned head for decoration by the local tribes and also international market. Hunting of this highly endangered specie still take place by high profile personalities of the area (Chaudhry et al, 2002). The population of Chiltan Markhor was more than 1,200 in 1950s, which were reduced to about 200 in 1970. With the declaration of the CHNP as protected area in 1980, the population of the specie has reached to about 806. The Suleiman Markhor is also present in the northern part of the Chiltan range and a few Urial still survive on the western slopes between 1,500 meters and 2,100 meters. The population of the Chiltan wild goat (Chiltan Markhor) has increased substantially (84 in 1980, 700 in 1996 and 806 in 1999) as a result of protection and management by the forest department. Similarly the population of the straight-horned Markhor increased with community based management. According to the national park management plan (WWF-Pakistan 1998), 360 species of this animal were reported in 1987.

KKNP forms a large area of protected forest on the border with Myanmar and contains Asian elephants (*Elephas maximus*). However, human–elephant conflict (HEC) is threatening the security of KKNP's elephant population. HEC is having a detrimental effect on both the people and the wild elephants that live in the area. In the KKNP an internationally significant population of Asian elephants inhibited is facing problem of data deficiency on population, the distribution of elephants within the park or the threats to the elephants and their habitat (WCS, 2012). More than 400 bird species are reported to exist in KKNP. Four preserved species listed in the "Wild Animal Reservation and Protection Act of 1960" are found in KKNP (TAT, 2000). In addition, KKFC is considered as the Thailand's largest habitat for the Bengal Tiger (ONEP, 2006). Crocodiles, once common in some parts of Thailand, still inhabit remote swamps in the park. A recent discovery has shown small number of Siamese crocodiles in Petchburi river (WCS, 2012). Despite the fact that the National parks are protected areas where hunting is not allowed, but the hunting, pouching and killing of these species is still continued. Therefore, a need was felt for comparing the conservation strategies of these selected parks, to know the possible

threats to the endangered species and to know that what conservation strategies work better in the Asian countries.

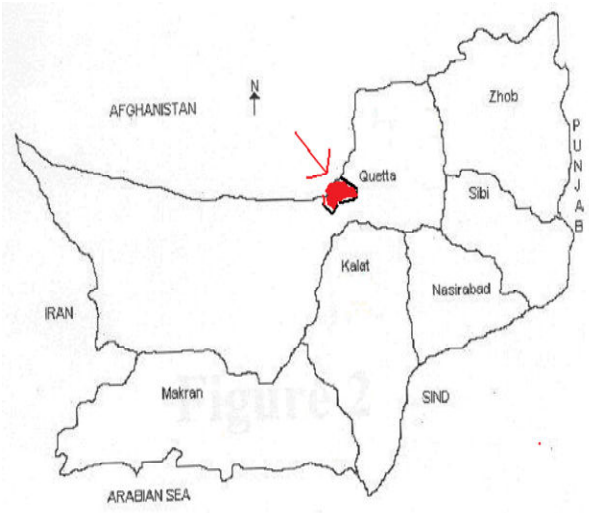
Methodology

The paper is based on both primary and secondary data. The primary data were collected from the managing staff of both the parks through interview techniques, focus group discussions and personal observation during visits to the parks. The Kaeng krachan national park was visited during doctoral study period of the first author in 2011. During these visits some Thai students of the natural resources department of the Asian Institute of Technology, Thailand helped in translating the respondents' views from Thai to English language. The Hazargangi national park was visited with the help of some local students of Geography department of Balochistan University, Quetta during 2010. The secondary data were obtained from research reports, articles and brochures. The data has been analyzed and critically evaluated. Conclusions were drawn and then necessary recommendations were made for conservation of national parks in the country.

Study area

The two national parks i.e., CHNP of Pakistan and KKNP of Thailand are shown in Figure 1. The CHNP is located in an arid mountainous region, 3335 meters above sea level (m.s.l) in the south-west of district Quetta in Balochistan province of Pakistan with an area of about 27,421 hectares (ha). The only tree that can be seen in the park is Shina tree (*Pistachea khinjik*) which is famous for its shina fruit. The animal species in the park include 18 mammal, 74 bird, 17 reptile and 2 Amphibian species (Shafique & Barkati, 2002). The KKNP is located along the Thai-Myanmar border in Petchburi and Prachuab Khiri Khan Provinces of western Thailand, and is part of KKFC. Its original borders encompassed an area of 2,478 km². In 1984, the park area was extended to 2,915 km² as proposed by the Hua Hin Environmental Conservation Group and the boundary area between Phetchaburi and Prachuap Khiri Khan Provinces was also included in to the park. Until now, KKNP is the largest national park of Thailand (DNP, 2007). The National Park is a massive arid rock mountain region, with 3,335 m.s.l.

Figure. 1: Location of Hazargani national park in Balochistan and Kaeng Krachan in Thailand



However, most of KKNP is covered with steep forest and over three-quarters of the area are covered with slopes greater than 30 %. Furthermore, 85 % of the terrain is evergreen rainforest while the rest is mixed deciduous forest. The topography is described by steep mountain ridges with swift-flowing rivers in restricted valleys. Most of the mountains are Granite mountains, few are Limestone mountains, and many are full of fluoride. It occupies the western half of Phetchaburi Province (Kaeng Krachan and Nong Ya Plong districts) and a portion of northern Prachuap Khiri Khan Province (TAT, 2000). Most of the area is

covered by rain forests which become the source of Pran Buri and Petchburi rivers. Therefore, humidity remains high throughout the year, with heavy rains during the rainy season and cool weather for much of the year. However, the steep forested areas of the park i.e., Ban Krang and Panoen Thung area are closed in rainy season (August and October) every year for visitor's safety and forest recovery (DNP, 2007; TAT, 2000).

Results and discussions

Conservation strategies of the two selected parks

There has been least trend of making forest and wildlife policies at the provincial level in Pakistan. The managing staff of the CHNP reported that the national policies prepared by the Federal Government are broad-based and are unable to address the specific needs of the provinces. The last time the Federal Government prepared policy for forest and wildlife was in 1991. A mechanism to turn the policy into action and to monitor implementation is lacking at both federal and provincial levels. The 1991 policy is almost obsolete, as it did not take into account the biodiversity issues. The recommendations of the National Conservation Strategy, Forestry Sector Master Plan (FSMP) and Biodiversity Action Plan were also not adopted due to weak enforcement and drawbacks related to social, economic and political factors. The WWF-Pakistan had proposed a detailed management plan for CHNP in Balochistan. The plan focuses principally on conservation measures for the endangered species. Part of the management proposals include establishment of a breeding nucleus elsewhere in Balochistan. Wildlife act (1974) provides funds for the establishment of National parks.

In 1997, a management plan was prepared for the forest department by the worldwide fund for nature (WWF) Pakistan, for CHNP. It has not been fully implemented. The principles of the sustainable use of species along with economic incentives are now universally accepted to achieve conservation. The managing staff of CHNP further reported that the current laws and regulations do not have the flexibility to support the concept of community participation. The illegal trade in wildlife continues almost unnoticed. Markhor heads and horns are shipped out of the country. The extent of this practice is not known which needs to be statistically surveyed. Provisions have also been made for the possible reintroduction of Afghan Urial that once occurred in CHNP. Management owes its success to the involvement of the communities (*Shahwani and Marri tribes*) surrounding the park. Settlement of Marri tribe on boundary of park in 1992 led to illegal hunting, fuel wood collection and grazing in northern part of the park.

Shahwani tribes are granted access to Chiltan national park to collect Shina fruit (*Pistacea khinjik*).

Trophy hunting conservation of CHNP

This type of conservation is usually adopted in ex-situ conservation but due to traditional inhabitation of surrounding tribes this type of conservation strategy is adopted. Trophy hunting is being widely accepted as an important tool in wildlife conservation. Trophy hunting provides an important incentive to local people to conserve both species and their habitats, especially in the case of community-managed conservation area. Local communities were persuaded that it is their interest to stop hunting these animals. In exchange, they receive some income from limited and carefully controlled trophy hunting. These hunts are based on annual surveys, which allow scientist and villagers to assess the status of Markhor and Urial populations. The respondents reported that since the introduction of the programme, the population of these two species has recovered dramatically, and the communities are committed and proud of their role in saving these animals. At the conference of parties of the convention on international trade in endangered species of wild fauna and flora held in Zimbabwe in 1997, an annual quota of hunted Markhor trophies from Pakistan was approved. The main argument used by the Pakistani delegation were that Pakistan is actively promoting community based management of wildlife resources and that the financial benefits from trophy hunts will go directly to participating communities as an incentive to maintain Markhor populations.

Table. 1: General comparison of the two parks

Parameters	CHNP (Pakistan)	KKNP (Thailand)
History	Established in 1980	Established in 1981
Location and Area	South-west of district Quetta of Balochistan province of Pakistan with an area of 27,421 ha.	Along the Thai-Myanmar border in Petchburi and Prachuab Khiri Khan provinces of western Thailand.
Current status	Declared as national park & funded by King Phillip of England.	Included in the list of ASEAN heritage parks and in 2005 it was submitted to UNESCO for consideration as a future world heritage site.
Topography	An arid mountainous rocky region.	Steep mountain ridges with swift-flowing rivers, most of the area covered by rain forest.

Vegetation	Scanty vegetation because of aridity. The only tree is dwarf *Pistacea khinjik* (Shina fruit), and other small herbs and shrubs.	Mostly covered by deep, steep forest. 85 % of the terrain is evergreen rainforest; the rest is mixed deciduous forest.
Objectives	Protection of endangered sp. Chiltan Markhor *(Capra falconeri chiltanensis)*.	Preservation of species diversity in its natural state for public education and enjoyment.
Endangered species (Mammals)	The IUCN red list of threatened animals (IUCN, 1996) include four species of wild goats, one of which is Chiltan Markhor (*Capra falconeri chiltanensis)*.	Four preserved species listed in the "Wild Animal Reservation and Protection Act of 1960" had been discovered. Asian elephants (*Elephas maximus*) are also under threat list of IUCN (2004).
Major threats	Markhor is hunted for its tender flesh as a food & long horned head for decoration.	Farmers kill elephants when they destroy their crops.

In Thailand the "Wild Animal Reservation and Protection Act of 1960" established wild animal reservation zones in order to protect their natural habitats. The Act also lists 15 species of preserved and rare/wild animal species. The objective is to increase their population numbers and to minimize pressure resulting from hunting. In the "National Park Act of 1961" natural parks were established to initiate protection, control, and overseeing of natural ecosystems and natural habitats of plants and animals. The managing staff of KKNP reported that picking or transporting of wood and natural resources out of any park's boundaries are prohibited. Other prohibitions include transporting and damaging animals, picking and transporting orchids, flowers, leaves and fruits. Profit–oriented activities are also prohibited in the parks. The "National Forest Reserve Act of 1964" prohibits unauthorized processing of wood and picking of wood products in national preserved forests. The "Animal Species Maintenance Act of 1966" protects and controls preserved animals for breeding purposes by prohibiting their castration, slaughter and export without permission.

The "Plant Varieties Protection Act of 1999" provides protection of new plant species, endemic plant species, and local and wild plant species. The Act specifies that permission is needed and benefit–sharing should be clarified if the stored or collected plant species or their parts are used for species improvement study, experiment and research for commercial purposes (ONEP, 2006). As far as animal species of KKNP is concerned, the report by the TAT (2000) mentioned that the forest is rich and complex, with hanging lianas, ferns and orchids, and an

abundance of fruiting trees and vines. Due to its location at the juncture of continental Asia and the Malaysian Peninsula, KKNP contains a very diverse collection of tree species, both continental trees like oaks, chestnuts, and maples, but also trees found on the Malay Peninsula like palms. Some of the valuable trees of KKNP include Makhamong (*Afzelia*), Takhian (*Hopea*), Chanthana (*Tarena*), Yang (*Dipterocarpus*), Taback (*Lagerstroemia*), Pradu (*Pterocarpus*), Kritsana (*Aquilaria*), etc. Like the plant community, the animals of KKNP represent both Asiatic and Malaysian species. According to the "Wild Animal Reservation and Protection Act 1960" the four preserved species listed in in Kaeng Krachan are Sumatra rhinoceros (*Dicermocerus sumatraensis*), Serow (*Capricornis sumatraensis*), Malayan Tapir (*Tapirus indicus*), Fea's barking deer (*Muntiacus feal*). Several species of hornbills, red jungle fowl, both Kalij pheasant and grey peacock-pheasant, the endangered woolly-necked stork, black eagle, and many species of songbirds, woodpeckers are present in the park. Most importantly, the ratchet-tailed treepie, which has not been found anywhere else in Thailand, first seen here by members of the Bird Conservation Society of Thailand in 1991 (BCST, 2012). The managing staff also reported that 57 species of mammals had been discovered in the park including Asian elephant, Malayan sunbear, Malayan pangolin, Asiatic black bear, Gaur, Sambar deer, Banteng, Indo-chinese tiger, Leopard.

Management of KKNP

The managing staff of KKNP reported that Thailand's Protected Area system is fragmented. Many of the areas may be too small to sustain their flora and fauna, especially populations of large vertebrates such as mammals like bears, tigers, leopards, and elephants. Recent efforts to enlarge the coverage of habitat include the declaration of 19 protected area complexes; 17 forest complexes and 2 marine/coastal complexes (ONEP, 2006). KKFC is one of the 17 complexes of terrestrial protected areas located in the West. The complex encompasses KKNP with "Mae Nam Phachi Wildlife Sanctuary" to the north and "Kuiburi National Park" to the south (ICEM, 2003). These three locations cover 4,373 km² area of largely pristine habitat, protecting extensive tracts of lower montane, dry evergreen and mixed deciduous forest, with smaller areas of dry dipterocarp forest (ICEM, 2003, p. 62). Therefore, KKFC is considered as an important and intelligent strategy to enhance conservation management of KKNP; combining two national parks and wildlife sanctuary into a single protected area complex significantly increases area of connected habitat and its conservation potential.

Furthermore, Thailand's protected areas management plans have been prepared since 1981 in which the first plan was designated to Khao Yai National Park. Since then, there have been many approaches to find

the best way to draft a plan. It has evolved from a team comprised of internal Royal Forest Department experts, to various forms of contractual arrangement with academia or government technical organizations (ICEM, 2003). The zoning scheme of KKNP is shown below in table 3. It is applied as a management measures for the protection of the park. The staff also reported that the International Tropical Timber Organization (ITTO) together with Thai Royal Forest Department and financial assistance from Netherlands, Japan, and Australia is working on a project with communities in the buffer zone of the KKNP. The project's purpose is to develop a working model for effective buffer zone development for uptake at other conservation sites in Thailand. Using participatory approaches, the project promotes social forestry and sustainable rural development within the communities in an attempt to protect and encourage the natural rehabilitation of the forest adjacent to the national park (ITTO, 2006). Another important management in KKNP is due to Karen settlements which are refugee camps that the Thai government keeps very quiet about.

Most of the occupants are fleeing the fighting between Burmese and Karen National Union forces, just across the border. There are a number of these camps around in Kaeng Krachan, but the government no longer allows visitors or publicity as it fears a sudden increase in refugee numbers (WCS, 2012). Karen settlements take their toll on wildlife through illegal farming and poaching, therefore they have been long persecuted as abusers of the park. However, recent projects by the Royal Family have been successfully discouraged their actions by appointing them as park custodians. In additional since the Kaeng Krachan Dam has been constructed across the Petchaburi River, a huge lake covering 45 km² was created. Consequently, on the shores of this vast reservoir, human settlement was then segregated to the main national park area (Thai Riviera, 2007). Table 2 below shows the summarized comparison of conservation strategies of the two selected national parks.

Management of threatened species

Tiger conservation project

The Wildlife Conservation Society (WCS) works closely with the Department of National Parks, Wildlife and Plants in and areas with high potential for tigers like KKNP. Since 1997, WCS has conducted baseline surveys to determine the occurrence of tigers, and has established ecological monitoring programs to determine tiger population requirements. Future WCS efforts will focus on preserving rainforest frontier in the Tenasserim Ranges straddling the Thai-Myanmar border, which links KKNP with forests in Taninthyari Division, Myanmar.

Table. 2: Comparison of Conservation Strategies of the two National Parks

Parameters	CHNP (Pakistan)	KKNP (Thailand)
National Policy	Balochistan Wildlife act (1974) provides for the establishment of national parks. WWF-Pakistan had completed a detailed management plan for CHNP in 1997. Current laws and regulations have the flexibility to support community participation	The Wild Animal Reservation and Protection Act 1960 tries to establish wild animal reservation zones in order to protect their natural habitats. It also controls import/export and supports the breeding of certain wild animal species. The National Park Act 1961 natural parks were established to initiate protection, control and overseeing of natural ecosystems and natural habitats of plants and animals.
Management	Trophy hunting Local communities were persuaded that it is in their interest to stop hunting these animals. In exchange, they receive some regular income. *Shahwani* tribes are granted access to Chiltan and to collect shina fruit (*Pistacea khinjik*). Management owes its success to the involvement of the communities (Shahwani and Marri tribes) surrounding the park. Settlement of Marri tribe on boundary of park in 1992 led to prevention of illegal hunting, fuel wood collection and grazing in northern part of the park. Local tribes in the buffer zone are given employment as forest guards to	Forest Complex KKFC is one of the 17 complexes of terrestrial protected areas located in the west of Thailand, combining national parks and wildlife sanctuaries into a single protected area complex significantly increases area of connected habitat and its conservation potential. • Zoning scheme • Strict Nature Reserve Zone • Primitive Zone • Recovery Zone • Outdoor Recreational Zone • Buffer Zone The Royal family have discouraged illegal activities of Karen villagers which are scattered throughout the park area

	maximize monetary benefits to the community.	and have been long persecuted as abusers of the park. Today, many of them act as park custodians.

This area is the largest and most promising wild areas for Thailand's tigers. Following WCS surveys in the early 1990's, camera-trapping in the forest core revealed an intact assemblage of large carnivores and prey species, including tiger, Asiatic leopard, gaur, banteng, sambar, tapir and the rare Fea's muntjac. Mark-recapture estimates of tiger density range from 1.96 to 3.67 individuals per 100 square kilometers, the highest densities recorded from surveys in 7 protected area forest complexes (WCS, 2012).

Table. 3: Zoning schemes management in KKNP

Zones	Purpose
Strict Nature Reserve Zone	Areas with high biodiversity of flora and fauna which should be closed to all human activity. It's a habitat of preserved/ threatened/ endangered species. This area is the forest area in the border to Burma.
Primitive Zone	Areas which act as a buffer for Strict Nature Reserve Zone. It is mainly a KKNP's forest area, which is important for Kaeng Krachan ecosystem and rivers.
Recovery Zone	Areas of degraded habitat where the long-term goal is to restore natural habitat with its associated biodiversity and to rezone the area for stricter protection and restricted uses. Natural regeneration can be assisted through fire control and the planting of native species by local communities.
Outdoor Recreational Zone	Areas of high recreation, tourism, education or environmental awareness values where sustainable ecotourism, recreational, conservation education or public awareness activities may be allowed as prescribed in the management plan.
Outdoor Recreational Zone	Areas where settlement and traditional and sustainable land-use, including agriculture, agroforestry, extraction activities and other income-generating or livelihood activities, may be allowed if they are consistent with basic conservation and sustainable use objectives. Land tenure may be granted to residents, whether they are indigenous cultural community members or migrants.

Buffer Zone	areas where local communities, tenured migrants and residents are allowed to collect and use natural resources, however, it must be conserved through traditional sustainable methods that do not conflict with biodiversity conservation requirements. Research, including the reintroduction of indigenous species, may be undertaken and park visitors may be allowed limited use. No clearing, farming, settlement, commercial use or other activities detrimental to biodiversity conservation should be undertaken. The level of allowable activities will vary from one site to another.

Source: ICEM 2003; TISTR 1992

Elephant conservation project

Crop raiding by elephants can be a major burden for farmers as crops are destroyed, human dwellings can be flattened, and people can often get hurt and even killed. Consequently, HEC leads to antagonistic attitudes towards protected areas and can lead to poisoning of elephant by farmers or otherwise killing elephants (Olson, 2007). In response to Human-elephant conflict (HEC) aforementioned as the major threat in KKNP, WCS has run a number of wildlife protection and conservation training courses for KKNP staff including HEC assessment methods; law enforcement techniques; navigation skills using map, compass, GPS; and community relationships. Participants gained an opportunity to apply their knowledge and experience in practical field situations. An article by Olson (2007) mentioned that WCS is in the process of mapping the distribution of natural water sources and saltlicks, assessing elephant abundance and distribution in KKNP, and quantifying the levels of HEC in and around the park. Local meetings on new approaches to reduce HEC with farmers have been conducted. In addition, WCS encourages farmers to take up these new ideas by providing them with information about new methods of reducing HEC and establishing a crop-guarding system at HEC hotspots in which the necessary equipment is provided. For example, the project by WCS Africa has been initiated: if ropes coated in chili-laden grease are strung around crop fields and/or an acrid smoke is produced from burning dry cow dung mixed with chilies, elephants will effectively be driven away from the fields. In addition, a trip-wire alarm system is suggested to frighten away elephants, as well as, facilities like sirens, spotlights, and whistles can be used to alert the watchers when elephants approach. The project also aims to work with the Thai authorities to improve law enforcement in KKNP (WCS, 2012). WWF Thailand works for "Wildlife Trade Campaign" which produced successful and practical outcomes in dealing with illegal wildlife trade

between 2000 and 2004. The Wild Animal Rescue Foundation of Thailand (WAR) aims to rescue wild animals and work out the campaigns against hunting and cruelty to wild animals. Bird Conservation Society of Thailand (BCST) has it objective to advance the knowledge of birds through bird watching, education and field projects. Wildlife Conservation Society (WCS) has carried out the Tiger Project in Thailand since 1997 to monitor tiger population in the wild.

Conclusion

In this article we compared in the conservation strategies of two selected national parks from Thailand and Pakistan. We found many differences in the conservation strategies of CHNP and KKNP. The major distinction in term of management strategies between the two national parks is that management of CHNP is strengthened by community approach, while in case of KKNP, not much involvement of the community was seen. However, there are some good strategies adopted by the KKNP which were not seen in CHNP of Pakistan. Firstly, KKNP is one part of the major complex of national parks and wildlife sanctuaries called as KKFC, which significantly increases area of connected habitat and its conservation potential. Secondly, the zoning scheme adopted by the KKNP has also played a major role in conservation of wildlife. Although the two national parks are almost established at the same time, but the KKNP has adopted excellent conservation strategies for conservation of endangered species. The KKNP should more adopt the community based approaches, whereas the CHNP should focus on zoning schemes for differentiating levels of conservation rings in the park. Therefore, the tow countries should co-operate each other for exchange of trainers and already adopted conservation measures.

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