

“Effectiveness of Animal conservation projects using Tools of Information Tech: Indian perspective”

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Abstract: Due to urbanisation, the human quest for conquer of more land has resulted in deforestation. As a result of it many species are endangered throughout the globe. Earlier none of the efforts were taken by human beings to save and protect these endangered species. However, now a days many efforts are being taken for the management of such endangered species through the use of various Information technology devices implementing various robust algorithms. Indian Government is trying their best to implement certain policies for saving wild lives. Day by day with the advancement of technologies, various projects undertaken are proving effective for the man and human benefit.

Keywords: *Micro-chips, PTT, ExtractCompare, Project Elephant, Project Hangul, Project Tiger, Microchips, Satellite collar, Indian Crocodile Conservation Project, Vulture conservation etc, Drones*

I. INTRODUCTION

Technology has made an impeccable impact on the lives of human beings. Various projects for wildlife animals are being implemented in India. By , the Ministry of forestry and environmental sanctions a huge amount of fund for Wildlife conservation. The fund is utilised for infrastructure and other facilities such as trenches, towers and some compound construction and water bodies.[1]. Also, recently a significant amount is spent on the various devices which helps to identify, track, monitor the animals. The study reveals that, The Indian Government at National, regional and local level is using IT tools which has helped to raise the graph by the significant amount. The paper will give a brief insight on various Projects runned by Government of India and related Statistical data. The study will also disclose the negative side of the use of technology for the same purpose. Ministry of Environment and Forests Annual report(MOEF) 14-15 (and others too)there are Acts, Authorities , Governing bodies are their to conserve wild life animals , but no proposal, ,planning is their to use IT tools for wildlife conservation. MOEF talks about discovery of new species , but not about use of IT. In MOEF 2014-15 report it has discussed about Image processing, MODIS software, GPS etc for the sake of forests fire. The paper will compare the level of technology of usage in India and amongst neighboring countries.

Objectives:

1. To study the various Projects implemented on wild animals using Information Technology and its effectiveness on wildlife conservation.
2. To explore various Government policies and decisions which are applicable to the save the endangered species.

Questions:

1. What are the various Wild animal conservation projects currently adopted by India.

2. To what extent IT will be helpful for the wildlife conservation?
3. What are the various Government policies are wildlife conservation?
4. What are the precautionary measure adopted by Government to prohibit wild animals from entering human residential areas?

II. ANIMAL CONSERVING PROJECTS

A. Project Elephant: Microchips

Project Elephant was first time implemented in India in the year 1992[5]. For the same, recently financial and technological support is given to 16 different states of India including Maharashtra. the micro-chips are given free of costs by the State Government of forestry and by several NGO's. Elephants are embedded with the microchips behind their ears, [1-4] this will help for their unique identification as well as illegal transportation. It stores details like location, date of birth, age, height and weight. [6]. As per the data book[7], the micro chips are further responsible to store name, age, ownership and medical fitness of each elephant details apart from above specified details. the same report, discuss that 224 Elephants reports are missing due the Statistical data available by the use of Micro-chips. To uniquely identify each of the elephant, a 10-digit number displayed on the sensor along with a chip reader is used. A license pertaining to the elephant's chips needs to be renewed every 5 years so as to track the elephants existence. A person committing offense related to elephant will be given an imprisonment of 7 years and a fine of Rs.10,000/-.

B. Great Indian bustard(Maldhokh)-PTT

The Great Indian bustard is a bird, popularly called as Maldhokh which is declared as critically endangered species as per IUCN under the schedule -1 of wildlife Protection act -1972[10]. In the year 2006, a sudden fall in the number of GIB was noticed as :Need to start Project Bustard “was being recommended by Rahman. In the year 2011, it was

finally declared as critically endangered species[8]. In the entire world, 100 GIB exists out of which 3/4th exists only in Rajasthan[11], currently only 20-30 are alive. There are number of factors contributing to the decline in the number of GIB which are lesser in grasslands and farmland, overgrazing by domestic animals, hunting[8] and extensive use of pesticides[10]. In the year 2013[15], WII helped Maharashtra state in the conservation of GIB, 3 GIB were tracked using PTT, such experiment was first time performed in the world. This PTT function for 3-5 years and the entire bird movement and its ecology was being studied. As per [8][9][12][14][15] the study the GIB and gain the valuable information they are being fitted with solar power transmitter, GPS tracker –monitoring device and radio tracking device. Use of such device, help the scientists to know the information about their type, location on day and time basis, peak activity time, rooting time, distance travelled. As per [12], it was easily evaluated that the 70 gms solar power platform terminal transmitter the its travels 8km/day and information was gathered at 7 different timings in a day.

C. Project Tiger: pug mark to drones

The decline of the tiger is a matter of concern as it rests on the apex of the wildanimals pyramid and is an national animal. Before a century, the tiger were thousands in number. However due to reasons such as unavailability of prey in the forests, reduction in the forests areas[19] and due to poaching and hunting[20], the number of tigers start declining. Tiger is found in 18 states of India, where, Maharashtra has largest density of Tigers i.e. 2.34 per 100 sq km in Kanhlagaoon as compared to other regions. The Project tiger is an initiative undertaken by the Prime Minister Mrs. Indira Gandhi in the year 1973. To identify and count the tiger estimates “pug mark method” of the left hind leg of the tiger was used till 2005. However after 2006, a survey of tiger estimation was carried out every 4 years which uses a double sampling technique which works in 2 phases: first the photographs were taken by the camera traps and later paw marks or droppings count used. This technique estimated the number of Tigers, however another technique called as Occupancy/distribution surveys which tells their location and distribution. In the year 2011, Tiger named “Kala” was embedded with a radio-collar in Bramhapuri and was released, with the use of technology it was recaptured in the year 2015[21]. In 2014 along with the double sampling camera trap, a scat DNA analysis was done by WII. The study further reveals that the number of Tigers increased by 6% per year. Every tiger has a unique patterns of strips on their body[17][23], by using this the scientists developed a software called as “ExtractCompare” which takes photograph of tigers and transfers on the 3D surface, the striped pattern which are almost like distinct barcode are then tallied with the images stored in the database.. When there is “high similarity” is between the probe stripe and the stored stripe pattern the Tiger identification is successful. Earlier method used to take 15-20 days to tally while the software gives the result in just 30minutes. Besides, identification the software identifies the Tigers as stray instance or habitual offenders and within 24

hours and thus are removed from the areas. It reduces the man-animal conflict.[23]. Maharashtra is the state which uses camera trap technique installed in every 3 sq km for 25 days and for left hours in running state. The technique is about using extensive use of sensor such as : heat and motion sensor which takes the photograph and detects the animal movements also [24]. In the East Vidarbha the Project Tiger involves embedding radio collars in 15 tigers, out of which implantation in 3 tigers is successfully done. Recently it is being planned that Drones:- aerial unmanned vehicles will be used for track tiger, movements, keep eye on poachers. The Drones are water-resistant and travel with a speed on 40Km/hr, fitted with GPS and high resolution cameras. Following Table shows Tiger count with respective year.

Year	Number of tigers	References
1913	100,000	[20]
1970	2000	[20]
2006	1411	[19][20]
2010	1706	[18]
2014	2226	[18]
2015	3200	[18]

[Table 1: Yearwise Number of Tigers]

D. Project Hangul: Satellite collar

In 1996, IUCN and CITES declared Hangul as the criticallyendangered wildlife species and it was incorporated in the Schedule-1 of Wildlife protection Act 1972 and in Jammu and Kashmir wildlife protection Act-1978[30]. He same views were expressed by[35] specifies that the hangul population is reduced to just 10%as per the estimated population in the last 6 decades.The reason behind the decline of hangul population is poaching, habitat destruction and over grazing by the domesticslivestock[29] and wild fires[30]. The hangul used to move in a group of 300 sometimes 500 in the year1980XXXXXX as per [29], but now the size is reduced to 10-12. Taking into consideration seriousness of the problemIndian Government, NGOs and some Industries created a long term plan for the saving life of Hangul called as “Project Hangul” in the year 2008 for 5 consecutive years. A fund of 22.06 Crores was sanctioned for the same. As per[37] a 25 Crores sponsorship was sanctioned by MOEF, in the start of 21 century. The fund was utilized for the keeping track of the Hangul and for the artificial breeding. The Hangul were captured chemically by a Syringe projector or a “dot gun” and then they were fitted by state-of-art satellite collar to 4 HANGUL. [30] the satellite collar costing 2.0Lakhs each and equipped with various units viz multi-function sensors and implants. The satellite were hooked by a German based firm, the European Iridium satellite used to process the data gathered from the satellite collar and give to the German firm. At the same time, in the 5-years Hangul saving project along with the satellite collar other technologies such as Animal photograph technology along with Geographical Information system was used[31].

Year	No. of Hangul	References
2009	175	[29]
2011	218	[29]
1989	900	[29]
1970	150	[29]
1970	170	[36]
1980	340	[29]
2008	160	[29]
2011	219	[29]
2011	218	[35]
2009	175	[36]
2010	172	[32]
2010	190	[34]
2014	443	[34]

[Table 2: Yearwise Number of Hangul]

The census related to Hangul population is conducted in every 2 years and as per the survey conducted by various stakeholders the resultant is given below:

From the statistical data we can easily found out that the Hangul population is on significant rise as per the recent report by [TOI], which earlier was 219 in the year 2011. The purpose of using Information tool like satellite telemetry has thus served its purpose as rising the Hangul population.

CONCLUSION:

The conservation scenario is nostalgic in case of insects, as they are always considered as pests. But, every insects is not pests, it will not necessarily harm environment and human beings. Apart from being fifth in the eco-system Insects are the best source of pollination, used as pharmaceutical product, ornaments, wax, eatables in one or another form. If insects are not their the entire balance of the eco-system will collapse, hence they must be conserved. But as of now, by evidence it seems that there are no conservation efforts done by Government of India with the use of IT and its tools. Traditional methods such as collection of insects are done by pitfalls methods , photographs and insects collecting net. Atleast, conservation of beneficial insects such as honey-bee, silk-worm, lac etc must be done as they are commercially and environmentally beneficial in India. Surprisingly the efforts are taken in HongKong, they have created the informative map regarding distribution of ants across globe.[37] Honey bees who contributed one-third of our food are disappearing from entire world a suitable IT tool can be developed for its identification, monitoring so that conservation is not a challenge.[38] The scenarios is not so interesting in terms of reptiles, some reptiles are being suggested as to use IT tools for their conservation, but efforts are not worth.[39-40]

The research paper has given brief insights about some endangered species and its progress due to various initiatives taken by Government of India, NGOs and various Industries for promoting Corpportae Social Responsibility. The fund provided and policies laid down by each of them have proved that Information technology for studying wildlife behavior, analyse their reason of extinction, their movements and their final count as done in Census. No

recent statistics(reports are outdated) is there to know the current population of wild animals,

REFERENCES:

- [1] Sita will no longer be mistaken for Gita, The Hindu, June 25,2015.
- [2] Data on tamed elephants in Kerala trigger row, The Hindu, December 22, 2014
- [3] Micro-chips keep track of pachyderms,The Hindu, July 13, 2008
- [4] Now, silicon chips for Assam jumbos, - International identity code to help officials track movement of elephants, Telegraph India, August 29, 2002
- [5] <http://envfor.nic.in/division/introduction-4>, August 29, 2015
- [6] 224 elephants 'missing' in Kerala, The Times of India, August 5, 2013
- [7] Management and Maintenance Rules, 2012
- [8] news.mongabay.com/2014/02/tracking-one-of-the-worlds-last-great-indian-bustards-to-save-the-species/, 17 feb 2014
- [9] <http://scienceline.org/2014/01/on-the-ground-tracking-the-great-indian-bustard/>
- [10] Deccan herald ,State to protect Great Indian Bustards from extinction, Bosky Khanna,March 15, 2015,Bengaluru, DHNS
- [11] Efforts to save GIB will be made upto international level: Rajasthan govtSaurabhSharma,TNN, The Times of India, May 8, 2015,
- [12] Radio-collared Great Indian Bustard ‘Chotu’ travels 103 km to reach Karnataka border, The Indian Express, July 7, 2015, 1:31
- [13] Wildlife finds CSR funding, Livemint, 22 September 2015,
- [14] Task force set up to protect Great Indian Bustards, Lesser Floricans, Vijay Pinjarkar,TNN ,The Times of India, March 28, 2014, 03.04 PM IST
- [15] Endangered great Indian bustard fitted with transmitter in Warora, The Times of India, December 26 , 2013 Vijay Pinjarkar
- [16] Tiger siblings to move to western ,The Times of India September 17, 2015, 09.42 PM IST
- [17] In a first, state & WII to conduct wolves' count, The Times of India, September 9, 2015, 03.28 AM
- [18] Leopard in a spot: Numbers rise but this cat is in danger, Hindustan Times, New Delhi Updated: September 13, 2015 15:17 IST
- [19] Not enough forests for increasing tiger count, The Hill posts, September 4 2015,
- [20] Project Tiger: How India has kept the tiger alive, DNA, Sunday, 26 July 2015 - 7:00am
- [21] Complete picture: All tigers in state covered in camera trap op, The Indian Express, August 13, 2015
- [22] Expert Group Questions Methodology Adopted For Tiger Census, NDTV, January 22, 2015
- [23] India is now tracking its tigers by counting their stripes,Quartz India,December 14, 2014
- [24] Study spots 70 tigers, 180 leopards outside Vidarbha’s tiger reserves, Hindustan Times, Mumbai Updated: Aug 04, 2015 23:21 IST
- [25] TOI, Drones to go tiger-spotting in Sunderbans, from September, The Times of India, August 30, 2015, 12.35 AM IST
- [26] GPS-aided cameras to keep track of Gir lions, The Times of India, August 14, 2015, 03.30 AM IST
- [27] TOI, Umred-Karhandla tiger Jai fitted with radio collar, The Times of India, September 16, 2015, 03.21 AM IST

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- [28] An eye on the Hangul, The Hindu, 14 April 2013.
- [29] 'Hangul' population on the rise in Dachigam National Park, The Times of India, PTI | Jan 3, 2014, 02.50 PM IST
- [30] Endangered hangul flourish in Kashmir's Dachigam National Park, PTI, Dachigam Updated: Jan 03, 2014 19:04 IST
- [31] Save Hangul project, <http://iasmaker.com/contents/display/save-hangul%E2%80%99-project/>,
- [32] Army To Help Save Hangul or Kashmir Stag, Kashmir News Live, September 18, 2011
- [33] Centre steps in to protect endangered species in J&K, The Tribune, May 2 2015 12:10AM,
- [34] Tiger population rising, India home to more than 2,000 big cats, Hindustan times, November 30, 2014 12:33 IST
- [35] voices.nationalgeographic.com/2013/04/11/kashmir-stag-census-wildlife-sos-studies-the-critically-endangered-subspecies-of-red-deer/ Rare Kashmir deer 'makes comeback', BBC News, June 8 2009.
- [36] Snow Leopard, Hangul up for Corporate adoption Want to save endangered species, pay for it, The Kashmir monitor, APRIL 12, 2015
- [37] <http://antmaps.org/>?
- [38] <http://learningenglish.voanews.com/content/honeybees-are-disappearing/2924344.html>
- [39] <http://www.thehindu.com/news/cities/Thiruvananthapuram/microchipping-to-keep-tabs-on-animals/article8033844.ece>
- [40] <http://www.mumbaimirror.com/mumbai/others/Snakes-may-get-microchips-to-prevent-poaching/articleshow/48596328.cms>