4 Conclusion

The latest / most recent vulture population estimation in Gujarat conducted in May 2016 has indicated that the total population of four species of vultures (viz. White-rumped Vulture *Gyps bengalensis*, Long-billed Vulture *G. indicus*, Red-headed Vulture *Sarcogyps calvus* and Egyptian Vulture *Neophron percnopterus*) was 999 individuals. Furthermore, an increase in the population of three out of four species of vulture viz., Red-headed Vulture (300% increase), Egyptian Vulture (36.1% increase) and Long-billed Vulture (6.65% increase) was recorded as compared with the population estimation of 2012.

As the previous vulture estimation in May 2012 has revealed the existence of 1037 vultures (same four species as in 2016 survey), it can be concluded that within the time-span of four years, vulture population has declined marginally by 3.66%. Of the total 999 vultures enumerated in 2016 surveys, 843 (84.38%) were *Gyps* vultures (including 458 White-rumped Vultures and 385 Long-billed Vultures) meaning thereby that Gyps vultures had a lion's share in the total vulture population of the State in May 2016. The two 'non-*Gyps*' species of vultures had a population of 156 vultures (24 Red-headed Vultures and 132 Egyptian Vultures) that constituted only 15.61% of total vulture population. As the Gyps vulture population had predominantly contributed to the total vulture population of the State in May 2016, its comparison with that derived during the previous estimation (i.e., 2012, 2010 and 2007) had been considered important. Such comparison has concluded that *Gyps* vultures population had declined by 10.12% during 2012-2016 time-frame indicating an annual decline of 2.63%. The *Gyps* population decline between 2007 & 2010 estimation and that between 2010 & 2012 estimation had been 25.57% (annually 9.28%) and 11.92% (annually 6.15%) respectively. Thus, one may conclude that annual rate of population decline for *Gyps* vultures have become slower between 2012-2016 (2.63%) as compared to that between 2007-2010 (9.28%), 2010-2012 (6.15%). *Gyps* population decline between 2012 and 2016 is also low in comparison with the decline during the long-term time-frame of 2007-2016 (5.65%). It is found that between 2007 (1,431 *Gyps* vultures) and 2016 (843 *Gyps* vultures), there has been overall of 41.1% decline at annual decline rate of 5.65%. Thus, it can be concluded that population decline scenario during 2012-2016 time-frame has been less discouraging as compared to that between

2007-2010, 2010-2012 and 2007-2016 time-frames.

As per 2016 survey, among various regions of the State, Saurashtra region had supported highest population of vultures (n= 458, i.e., 45.84% of total population) followed by North Gujarat region (n=203, i.e., 20.32 % of total proportion). Saurashtra region had also shown the highest species richness of vultures (as all four species were found present) and very high crude density of total vulture population and *Gyps* vulture population. Central Gujarat and South Gujarat region supported moderate population of 157(i.e., 15.71% of total vultures in the State) and 109 vultures (10.91% of total vultures) respectively. Though North Gujarat has recorded second highest vulture population (next to Saurashtra), it may be noted that it is mainly due to high Egyptian Vulture and to some extent good Long-billed Vulture population in the region. North Gujarat's entire WRV population is lower than that of Egyptian Vultures and Long-billed Vultures and it is concentrated in Mehsana district only (that too, in Kadi taluka). Kachchh region had recorded lowest population of vultures (n=72) during the 2016 survey and comparison of its Gyps vulture population in 2016 (n=70) with that of 2007(n=462) has indicated a massive population decline (84.84%, annually 18.74%), which may be due to combination of mortality and inter-district or even trans-boundary population shift.

It is also found that among the four vulture species covered under the population survey, the steepest population decline in State has occurred for White-rumped Vultures. It can also be concluded that decline in State's vulture population has been mainly due to decline in White-rumped Vulture population and not due to any other species. Thus, between 2012 and 2016 population survey, WRV population has declined by 20.62% with an annual decline rate of 5.61%. For a decade-long period of 2007-2016, it is also understood that between 2007 (1,147 WRVs) and 2016 (458 WRVs), WRV population has declined by 60.1% with annual decline rate of 9.61%. Though, Long-billed Vulture is a *Gyps* species, it has not contributed to the vulture population decline in the state as Long-billed Vultures (LBVs) have certainly exhibited positive population trend. Thus, for the short-term period between the two latest population estimations, i.e., between 2012 and 2016, the LBV population has increased by 6.65% with an annual increase rate of 1.62%. The population increase for LBV is even more prominent for the long-term time-frame of 2007-2016. Thus, if the comparison is made between Long-billed Vulture population of 2007 estimation (n= 217) with that of 2016 population estimation (n=385), it is revealed that there has been an increase by 77.2% in LBV population with an annual increase rate of 6.51%.

Population trend for two "non-Gyps" vultures has also been found to be

encouraging. The population of Red-headed Vulture has increased from 8 individuals in 2012 to 24 individuals in 2016 (300% increase) and that of Egyptian Vulture has also increased from 97 individuals in 2012 to 132 individuals in 2016(36% increase).

On the whole, it can be concluded that White-rumped Vultures are relatively in critical situation as far as population profiles of the four species of vultures in the State is concerned. It can also be concluded that Saurashtra has done progressively better from the view-point of vulture population, whereas Kachchh has considerably suffered.

White-rumped Vultures on a Neem tree

White-rumped Vultures on a Roof-top

White-rumped Vulture-Taking off

white rumped vulture at a wetland

White-rumped Vultures-Horaltic Pose

Egyptian Vulture-An Adult

Egyptian Vultures-An Adult &A Juvenile

Egyptian Vultures at a Feeding Site

An Adult Egyptian Vulture-Landing

Egyptian Vultures(Adults)-Resting on a Neem Tree

Glimpses of Long-billed Vultures and Their Rocky Habitats

Glimpses of Red-headed Vulture

5 Recommendations

Status of Vultures in Gujarat - 2016 Page 78
Various issues regarding conservation of the four species of vultures-especially White-rumped Vulture- have been revealed during the present and previous vulture population estimation. By taking them into consideration the past trend and existing population of vultures in the state, various conservation measures are suggested below:

The 2016 vulture population and its comparison with the decade back population status has shown that Saurashtra has exhibited healthy status of vultures from the view-points of species richness of vultures, current population status and population trend between 2007 and 2016. Thus, every effort should be made to maintain this scenario.

- **Need to Create and Maintain Vulture Feeding Sites especially for White-rumped Vultures (WRV)**

  Out of four species of vulture, three species viz. Red-headed Vulture, Egyptian Vulture and Long-billed Vulture have shown increase in their population whereas, the White-rumped Vulture have suffered the decline in its population. Keeping this in view, conservation efforts should be directed mainly for conservation of White-rumped Vultures in the state. New Feeding Sites have to be created primarily for White-rumped Vultures. For that purpose, feeding sites should be created in/near the areas known for regular occurrence of good numbers of White-rumped Vultures. The data collected during May 2016 vulture estimation can be used for selection of White-rumped Vultures' Feeding Sites. The Feeding Sites should be fenced and while fencing, care should be taken to have sufficient size of the site that would facilitate landing and taking off of the vultures. Disturbance by feral dogs to the vultures at feeding sites/panjrapols can be one of the most critical problems that needs to be innovatively solved. Vultures are readily disturbed by feral dogs and hence face a great deal of competition for food. Innovative ideas will be required to create suitable dog-barriers at the vulture feeding sites to reduce the disturbance caused by feral dogs. Moreover, strict care should be taken to see that vultures get diclofenac-free carcasses at such vulture feeing sites.

- **Need to Create and/or Maintain Vulture Drinking-cum-Bathing Sites especially for White-rumped Vultures**

  White-rumped Vultures at many sites in Gujarat roost and/or nest in large trees along the peripheries of village ponds or other types of ponds in the rural landscapes. They mandatorily use such ponds on regular basis to fulfil their drinking water needs and also to bathe. Therefore, if no natural water body exists near the feeding site, the same should be created artificially.

Non availability of food especially in late breeding groups is a major cause of high mortality of the chicks. Death by starvation can be prevented by ensuring regular carcasses supply at vulture restaurant at least during breeding season.

- **Diclofenac Monitoring**

  Government of India and Government of Gujarat have taken measures to ban the use of veterinary drug 'diclofenac' for the treatment of livestock. Effective implementation of this ban should be closely monitored and NGOs and vulture enthusiasts can be encouraged to play role in enforcing it.

- **Need for continuous monitoring of vulture population in the state**

  In order to understand the trend of vulture population in the state, it is recommended that vulture population estimation are conducted in the state at regular interval of 2 years. It is also recommended that in addition to the May/June vulture estimation at 2 years' intervals, nest and nestling during nesting season may also be carried out in the State at the interval of every 2 years.

- **Awareness Programmes Targeted towards Public for *Gyps* Vulture Conservation**

  In the modern society, continuous presence of vultures near one's residence or work-place is not tolerated by many people. This intolerance is due to multiple reasons like superstition, vultures' visually unpleasing appearance and also due to their habit of eating carcasses. Due to such socially perceived reasons, vultures' real value as nature's scavengers and as indicators of health of environment is forgotten by laymen. Thus, our society needs to be continuously made aware about the ecological role of vultures in our ecosystems and environment. Examples of anecdotal characters like "Jataayu" in the Epic Ramayana should be used symbolically for emphasizing significance of vultures.

  The first Saturday of September each year is observed as International Vulture Awareness Day (IVAD). It aims at raising awareness amongst the public about the critical role vultures play in ecosystems and about the need to conserve vultures. In 2015, about 70 organizations across the world (including several Indian organizations) observed IVAD. However, the celebration of the day needs wider publicity and greater participation in the State for which concerned Govt. and Non-Govt. organizations should work together in advance.

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- **Rescue and breeding programme**

  As per the vulture conservation plan in India (2006) by MoEF, Government of

India a vulture care and breeding center in Gujarat has been set up at Sakkarbaug zoo Junagadh (Pandey *et al.* 2010). Ahmedabad too has such facility now. Some NGOs and individuals in Ahmedabad and other cities are also very seriously working in the area of vulture rescuing. However, in view of the on-going population decline, it is recommended that more such breeding centers may be set up with emphasis on White-rumped vulture, so as to expedite the conservation and restoration of the White-rumped Vulture population.

- **Incentive to farmers**

  It is observed that White-rumped Vultures nest/roost on tall coconut/palm trees particularly in Bhavnagar district and South Gujarat and Kachchh regions. Gujarat Forest Department has announced compensation for the losses of coconut/palm leaves/fruits in case vultures nest on those trees. Pandey et al (2010) had recommended that the farmers should be made aware of such provisions so that they are encouraged not to disturb vulture nests on their coconut trees. However, apart from/in place of monetary compensations, NGOs and Govt. organization should consider to plan and implement some other innovative strategies that would encourage farmers towards vulture care/conservation.

- **Panjrapols'-Important Vulture Conservation Sites**

  Gujarat has a tradition of cattle care centres ('Panjrapols') managed by NGOs often with Government support (Annexure V). Such panjrapols have nearby dumping sites where the carcasses of dead cattle are disposed off. These sites are the most favourable feeding grounds for vultures because there is surety of food for vultures at these sites. During many past the vulture counts, large number of vultures were recorded at such 'Panjrapols' related dumping grounds. If these 'Panjrapols' are strictly made diclofenac free and free of dog-meanace, a majority of vulture population can be saved from the threat of diclofenac. Hence it is recommended that all 'Panjrapols' with major carcass dumping sites should be strictly monitored in cooperation with trusts from the view-point of use of diclofenac & disturbance by feral dogs, regular availability of diclofenac-free carcasses and availability of waterbody for drinking and bathing water needs of vultures.

- **Need for sustaining interests of NGOs in vulture conservation**

  To sustain the interests of local NGOs and individuals towards vulture conservation, it is recommended that NGOs should be supported for conservation of vultures in their respective areas and they may be awarded for their role in vulture conservation. School based eco-clubs should also be encouraged to create awareness among local public for vulture conservation (Pandey *et al.* 2010).

- **Nodal Agency for Vulture Conservation**

  GEER Foundation should be made Nodal Agency on behalf of Forest Department. In this regards, the following actions need to be taken by GEER Foundation.

  1. Conducting studies on status of vultures for their effective conservation.

2. Site specific management plan should be prepared for effective conservation of vultures.
3. Conducting awareness campaigns / camps in Vulture Safe Zone and other potential areas.
4. Preparing a compendium of the abstracts of the works done so far on vulture conservation in Gujarat State / India / World.

- **Participation of Parsi Community in vulture conservation**

  Since Parsi Community is directly dependent upon vultures for disposal of dead human bodies in their 'Towers of Silence', the community may be encouraged to participate in the long term conservation of vultures.

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Annexure 1: Details of District Nodal Officers, District Representatives and volunteers who participated in vulture population estimation - 2016

Sr. No.	District	District Nodal Officer	District Representative	Volunteers
1	Ahmedabad	Dr. H. R. Prabudhdha, IFS,	Shri Kartik Shastri	Rushabh Shah, Karan Shah, Purvi Shah, Dhruv Sangavi, Dhaval Joshi, Dhey Vanja, Ashit Soni, Elesh Mistri, Gaurav Shahu, Yatri Bakshi, Brinki Desai, Jitendra N. Dave, Amit Parmar, Kamlesh R. Saroj, Harsh R. Parmar, Jay J. Vaghela, Rajesh Panchal, Ajay, Mahesh Patel, Vasant Patel, Himansu Leuva, Arvind R. Parmar, Sameer Patel, Mahendra Jain, Vishal Das, Vandana Thakur, Jaimin Patel, Dr. Pratiksha Patel, Bhardwaj Singh Vaghela, Ritesh Sheth, Parambuch, Nittal Jatakiya, Arja Patel, Shrikant Pandey, Rushi Kumar Bhatt, Sherwin Everett, Ankit Trivedi, Naresh Jadhav, Parth Bharat Patel, Vikrampagi, Chetan Thakor, Harsh Pagi, Ajitbhai Thakor
2	Amreli	Dr. Mohanram, IFS Shri Karuppasamy IFS	Shri Viral A Joshi	Rashik Chavada, Ashok Mashru, R C Mehtra, Jignesh Kalavadiya, Shuresh Varu, Vipul Laheri, Rohan Joshi, Bhanu Bhai Adhavriyu
3	Anand	Shri A. H. Gadhvi, GFS	Shri Dhaval Patel	Vishal Mistry, Mehul Patel, Neeraj Parmar, Neel Talati
4	Arvalli	Smt. Aaradhana Shahu, IFS	Shri Irshad Theba	Alap Pandit, Ankita Patel, Darpak Joshi (GEER Foundation), Gaurang Shah,

Sr. No.	District	District Nodal Officer	District Representative	Volunteers
5	Banaskantha	Shri Prakash Raval, GFS	Shri Kailash Jani	Suresh Prajapati, Harshad Joshi, Sanjay Patel, Devrshi Bhavshar, Hareash Pandya, Rushi Raval, Bhargav Dave
6	Bharuch	Shri H. F. Patel, GFS	GFD	GFD
7	Bhavnagar	Dr. G. S. Singh, IFS	Dr. Indra R. Gadhvi & Ms. Ruchi Dave	Dr. P. P. Dodiya, Amit Parmar, Shardul Gorda, Mahesh Dabhi, Bhagirath baraiya, Bhargavshin Zala, Harsh Yadav, Shailesh Dihora, manshuk Jopiya Drushti Dave, Jignesh Joshi, Divyraj Shah, Nitaben Joshi, Uday
8	Botad	Shri A. E. Semul, IFS	Dr. Indra R. Gadhvi	Dr. P. P. Dodiya, Amit Parmar, Shardul Gorda, Mahesh Dabhi, Bhagirath baraiya, Bhargavshin Zala, Harsh Yadav, Shailesh Dihora, manshuk Jopiya
9	Chhota Udepur	Shri D. C. Mehta, GFS	Shri Kartik Upadhyay	Dr. Ranjitsinh V Devkar, Bhautik Deshai, Arya Pravin Maharaj, Neelkumar R Solanki, Alisgar Vora, Rutvi Joshi, Jaldhi Shukla, Shrusti Singal, Rocky Maharaj, Rakesh vadhwana, Dhaval Harsola, Jaydeep Sharma, Jigar Vaidya, Mittal Patel, Rahul Bhatt, Foram Munshi
10	Dahod	Shri P. A. Vihol, GFS	Shri Ajay Desai	Shakir Kadiwala, Nilam Amin, Akil, Dharmendra Khatri, Priti ben shah, Mukhtar Kadiwal, Bankim Gandhi, Ashil Shah, Sarav Desai, Milan Shah, Radha Shah, Ajay Desai, Usha Desai, Dr. Prashant Shah, Panna Shah, Vimal Shah, Murtuja Limthiwala, Kishor Solanki, Ashok Parmar

Sr. No.	District	District Nodal Officer	District Representative	Volunteers
11	Dang	Shri S. Aanadkumar, IFS	Shri Devashis K Jadia	Ritesh Nai, Kalpesh Patel, Mahbub Boliya, Rashik Mahakal, Nayan Parmar, Niraj Bari, Hilesh Jopiwala
12	Devbhoomi Dwarka	Shri R. Dhanapal, IFS	Shri Chirag Solanki	Yashodhan Bhatiya, Kishan Vichhi, Ramde Bhatia, Shabina Shastri, Dr. Mehul Bhadania, Viswas Thakker, Mehul Duduya
13	Gandhinagar	Shri K. T. Parmar , GFS	Shri Naushad Theba	Husen Patel, Tirthraj Jadeja, Bhargav Dadhaniya, Kaushal Patel, Dev Paramar
14	Gir-Somnatha	Shri D. I. Thakkar, GFS [except Gir(W) forest area] Shri Pradip Singh, IFS (Gir-W)	Shri Dineshgiri D Goswami	Jignesh M Gohil, Brijesh Shah, Divyes Chauhan, Nanji Kamliya, Bhagvan Bhai Solanki
15	Jamnagar	Shri D. M. Joshi, GFS	Shri Chirag Solanki	Yashodhan Bhatiya, Kishan Vichhi, Ramde Bhatia, Shabina Shastri, Dr. Mehul Bhadania, Viswas Thakker, Mehul Duduya
16	Junagadh	Shri R. Senthilkumaran, IFS	Shri Punil Gajjar	GFD
17	Kachchh	Shri S. P. Patel, GFS Shri L. J. Parmar, IFS Shri A. C. Patel, IFS	Dr. Virag Vyas, Shri Devesh Gadhvi Shri Santilala N Varu,	Shidhar Raval, Kaushal Patni, Yashapalsinh Jethva, Ashwin tank, Navin N Bapat, Jaysinh A Parmar, Subodh B Hathi, Mohmadhusein B khatri, Darshit Mehta, Dipak Goshwami, Urmil B Jani, Ganibhai Khatri, Devendrsinh Jadeja Nikal Jat, Rachna Rav, Nedish Vaidh, Nirav Pomal, Aashis Joshi
18	Kheda	Shri Ashwin Parmar, GFS	Shri Dhaval Patel	Vishal Mistry, Mehul Patel, Neeraj Parmar, Neel Talati

Sr. No.	District	District Nodal Officer	District Representative	Volunteers
19	Mahisagar	Shri J. A. Jhala, GFS	Dr. Sandeep Munjpara	Dr. Devanshi Joshi, Kalavanti Mokariya, Jigar Joshi (GEER Foundation)
20	Mehsana	Shri Y. L. Varma, GFS	Shri Anil Jivanlal Patel	Acharay Rajendr P, Harsh Govindlal Purohit,Patel Darshita A, Patel Krupal J, Jani Gopal Upendra, Barot ketan K, Parikshit, Umang Narendr Mistry
21	Morbi	Shri M. M. Bhalodi, GFS	Shri Bhavesh A Trivedi	Dharmesh Kagathara, Dhaval Popat, Vimal Undkat, Dr. Milan Bharad, Chirag Malvi, Ashok Sahariya, Ravi Ardeshna, Kuladip Chauhan, Chirag Kadivar, Anirudh Boricha
22	Narmada	Dr. Sandeep Kumar, IFS	GFD	GFD
23	Navsari	Smt. Nisha Raj, IFS	Shri Palak Thakor	Trwidh Kapadia, Nayan Parmar, Hitesh Tapiwala, Niraj Ba ri
24	Panchmahals	Dr. Anshuman Sharma, IFS	Dr. Sandeep Munjpara	Dr. Devanshi Joshi, Kalavanti Mokariya, Jigar Joshi (GEER Foundation), Noor Rathod
25	Patan	Shri J. K. Makawana, GFS	Shri Rohit P Parjapti	Hardikpatel, Ashiskumar Bhega, Varda J Mehta
26	Porbandar	Dr. Shobhita Agarwal, IFS	Shri Bharat Rughani	Vishal Samani, Sandip Ganatra, Satyam Vora, Rajoo Chayya, Mukesh Thanki, Puran Gondaliya
27	Rajkot	Shri S. M. Paramar, GFS	Shri Bhavesh A Trivedi	Dharmesh Kagathara, Dhaval Popat, Vimal Undkat, Dr. Milan Bharad, Chirag Malvi, Ashok Sahariya, Ravi Ardeshna, Kuladip Chauhan, Chirag Kadivar, Anirudh Boricha
28	Sabarkatha	Dr. K. Ramesh, IFS	Shri Irshad Theba Shri Mayur Rathod	Alap Pandit, Ankita Patel, Darpak Joshi (GEER FOUNDATION), Gaurang Shah,

Sr. No.	District	District Nodal Officer	District Representative	Volunteers
				Riya Patel, Bhumika Ranjiyani, Bijal Patel, UrvshiNayak, Himani Patel
29	Surat	Shri Puneet Nayyar, IFS	Shri Krunal Trivedi	-
30	Surendranagar	Shri P. Purushothama, IFS	Shri Gulamahmed A Vora, & Shri Adity Roy	Vishal Thoria, Faruk Chavhan, Minesh Rathod, Chetan Trivedi, Shahil Shekh, Samit Shah, Jay Solaki, Rajak Shekh, Mayur Wadhawaniya, Sunil Bhatt, Amish Jalera,
				Pavan Patel, Niyati Kukdia, Jignasha Patel, Samai khan Malik, Rizawan Malik
31	Tapi	Dr. K. Sasi Kumar, IFS	Shri Palak Thakor	Trwidh Kapadia, Nayan Parmar, Hitesh Tapiwala, Niraj Bari
32	Vadodara	Shri V. K. Saxena, GFS	Dr. Ranjitsinh V Devkar	Bhautik Deshai, Arya Pravin Maharaj, Neelkumar R Solanki, Kartik Upadhyay, Alisgar Vora, Rutvi Joshi, Jaldhi Shukla, Shrusti Singal, Rocky Maharaj, Rakesh vadhwana, Dhaval Harsola, Jaydeep Sharma, Jigar Vaidya, Mittal Patel, Rahul Bhatt, Foram Munshi
33	Valsad	Shri M. R. Gujjar, IFS	Shri Jat Mahamadhasan U	Mitul Deshai, Aomabhai B Gamit, Aartiben N Siyal, Chandarbhai R Dhobi

Annexure 2: Datasheet used for vulture population estimation - 2016

વન વિભાગ ગુજરાત રાજ્ય

રાજયવ્યાપી ગીધ વસ્તી મોજણી-૨૦૧૬માટેનું મોજણી-પત્રક('ડેટા-શીટ')

"ગીર" ફાઉન્ડેશન

ગુજરાત ઈકોલોજિકલ એજ્યુકેશન એન્ડ રિસર્ચ ("ગીર") ફાઉન્ડેશન

મોજણીકારનું નામ અને સરનામુ: .....

મોજણીકારનો ઈ-મેઈલ: ..... મોજણીકારનો ફોન નંબર:.....

મોજણીની તારીખ:..... મોજણી શરૂ કર્યા સમય: .....(એ.એમ./ પી.એમ.) મોજણી પૂરી કર્યા સમય (એ.એમ./પી.એમ):..... કુલ કલાક:.....

મોજણીનું ગામ/શહેર: .....રેન્જ(લાગુ પડતુ હોય તો) ..... તાલુકોઃ .....જિલ્લોઃ .....

ગીધ માટે ખોરાકનું નજીકનું સંભવિત સ્થળઃ અંદાજિત અંતર (કિ.મી.):.....સ્થળનો પ્રકારઃગામના/ પાંજરાપોળના મરેલા ઢોરના નિકાલનું સ્થળઃ ☐ અન્ય:☐.....

ગીધ માટે પાણીનું નજીકનું સંભવિત સ્થળઃ અંદાજિત અંતર (કિ.મી.):.....જળાશયનો પ્રકારઃ ગામતળ/સિંચાઈ તળાવ/સીમ તળાવ/અન્ય (જણાવવું): .....

અ. નં.	જોવા મળેલ ગીધની જાતિ	મુખ્ય ઓળખચિન્હ	આવાસ	સમય	ગીધ જોવા મળ્યા હોય તે સ્થળ (પાંજરાપોળ/ખેતર/ ટેકરી/ પહાડ/ તલાવડી) નું નામ(શક્ય હોય તો જી.પી.એસ. રીડિંગ લખવા)	ગીધની સંખ્યા(જુદી જુદી પ્રવૃત્તિ મુજબ)												એકંદરે કુલ
						ખોરાક લેતા/ ખોરાક પાસે બેઠેલા		ઉડતા		વિશ્રામ/ રાતવાસો કરતા (વૃક્ષમાં)		માળામાં		પાણી પીતા/ પાણી પાસે બેઠેલા		કુલ પુખ્ત ની સંખ્યા	કુલ બચ્ચાં ની સંખ્યા	
						પુખ્ત	બચ્ચાં	પુખ્ત	બચ્ચાં	પુખ્ત	બચ્ચાં	પુખ્ત	બચ્ચાં	પુખ્ત	બચ્ચાં			

નોંધ: •આ પત્રક ગીધ જોવા મળ્યે ભરવું. મુલાકાત લીધેલ અન્ય(ગીધ વિનાના) ગામ/શહેર પરિશિષ્ટ-૪માં જણાવી શકાશે •દરેક જાતિના ગીધની સંખ્યા અલગ દર્શાવવી.• પાછળ દર્શાવેલ અગત્યની વિગતો અચૂક ભરવી. • જો મોજણીકારે ટીમમાં મોજણી કરેલ હોય તો માત્ર ટીમ-લીડરનું/ ટીમ પ્રતિનિધિનું નામ, સરનામું, ફોન નં. વિગેરે લખવા• ગીધની જાતિના નામ લખવા નીચે મુજબ 'કોડ' લખવા: વ્હાઇટ રમ્પ્ડ વ.: WRV કે WBV; ઇન્ડિયન/લોંગ બિલ્ડ વ.:IV/LBV, રેડ-હેડેડ વ.: RHV, ઇજિપ્શિયન વ.: EV• ઓળખચિન્હના કોલમમા જાતિ ઓળખવા વાપર્યું હોય તેવુ એક મુખ્યચિન્હ ટૂંકમા લખવું •આવાસ ના કોલમમા ખેતર/પડતર જમીન /ઝાંખરા વિસ્તાર/વન/વનરાજિ/વેટલેન્ડ વિગેરે પૈકી કે અન્ય યોગ્ય લાગે તે આવાસ લખવો.

અન્ય નોંધઃ

૧) ગીધનું રહેઠાણ/ રાતવાસો/ ખોરાકનું સ્થળ/ માળાની જગ્યાને નુકસાન કરતી પ્રવૃત્તિઓની નોંધઃ.....

.....

.....

૨) જોવા મળેલ ગીધની શારીરિક સ્થિતિની નોંધઃ (દા.ત. તંદુરસ્ત/ બિમાર/ ઇજાગ્રસ્ત).....

.....

૩) ગીધ દ્વારા આરામ/ રાતવાસો માટે વપરાશમાં લેવાતાં વૃક્ષની જાતિ અને અંદાજીત ઊંચાઈ (નિરીક્ષણ સમયે):

.....

૪) ગીધ પાંજરાપોળ પર જોવા મળેલ હોય તો તે વિશેની માહિતી (ગીધની સંખ્યા, પાંજરાપોળના ઢોરની સંખ્યા, ડાયકલોફેનેકનો ઉપયોગ, ગીધને થતાં વિક્ષેપો વિ.)ની માહિતીઃ

.....

.....

૫) જો ટીમમાં સર્વેક્ષણ કરેલ હોય તો ટીમ-લીડર સિવાયના મોજણીકારના આખા નામઃ.....

.....

૬) જિલ્લામા ગીધ મોજણી માટેના જિલ્લા--પ્રતિનિધિ(નિયુક્ત કરેલ પક્ષીવિદ) નું નામઃ..... ફોન નં..... ઈ-મેઈલઃ.....

મોજણીકાર ટીમ-લીડર ની સહી .....જિલ્લા--પ્રતિનિધિની સહી .....

Annexure 3: District wise vulture population of different species recorded since 2005 in Gujarat State

SN	Districts	2005				2007				2010				2012						2016					
		WRV	LBV	UnID Gyps	Total	WRV	LBV	UnID Gyps	Total	WRV	LBV	UnID Gyps	Total	WRV	LBV	UnID Gyps	EV	RHV	Total	WRV	LBV	UnID Gyps	EV	RHV	Total
1	Ahmedabad	254	0	0	254	279	0	0	279	224	0	0	224	88	0	0	38	0	126	24	0	0	32	0	56
2	Amreli	47	0	15	62	77	0	6	83	135	0	0	135	43	3	0	0	3	49	54	33	0	0	3	90
3	Anand	0	0	0	0	0	0	0	0	9	2	0	11	21	0	0	0	0	21	70	1	0	2	0	73
4	Arvalli	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	0	0	0	0	0	0
5	Banaskantha	8	0	46	54	11	0	0	11	0	3	0	3	0	0	0	33	0	33	0	0	0	72	0	72
6	Bharuch	42	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Bhavnagar	145	3	0	148	26	1	0	27	27	0	0	27	99	3	0	0	0	102	83	3	0	0	0	86
8	Botad	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	0	0	0	0	0	0
9	Chhota Udepur	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	0	0	0	0	0	0
10	Dahod	2	0	0	2	7	0	12	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Dangs	8	0	0	8	0	43	0	43	0	58	0	58	0	67	0	0	0	67	0	43	0	0	0	43
12	Devbhoomi Dwarka	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	0	0	0	0	0	0
13	Gandhinagar	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	5	0	5
14	Gir Somnath	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	0	42	0	0	2	44
15	Jamnagar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Junagadh	44	54	23	121	0	52	27	79	14	76	0	90	26	122	0	0	5	153	0	131	0	3	18	152
17	Kachchh	858	52	0	910	456	6	0	462	223	12	0	235	180	0	0	0	0	180	64	6	0	2	0	72
18	Kheda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
19	Mahisagar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	0	8	0	5	0	13
20	Mehsana	44	0	0	44	60	0	0	60	30	0	0	30	68	0	0	14	0	82	56	0	0	6	0	62
21	Morbi	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	0	0	0	0	0	0
22	Narmada	0	0	0	0	0	28	0	28	7	0	0	7	0	1	0	0	0	1	0	0	0	0	0	0
23	Navsari	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Panchmahals	50	107	0	157	0	11	20	31	0	19	7	26	0	36	0	4	0	40	0	9	0	0	0	9
25	Patan	19	1	0	20	9	0	0	9	0	0	0	0	0	0	0	6	0	6	0	0	0	2	0	2

SN	Districts	2005				2007				2010				2012						2016					
		WRV	LBV	UnID Gyps	Total	WRV	LBV	UnID Gyps	Total	WRV	LBV	UnID Gyps	Total	WRV	LBV	UnID Gyps	EV	RHV	Total	WRV	LBV	UnID Gyps	EV	RHV	Total
26	Porbandar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Rajkot	44	1	0	45	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Sabarkantha	0	62	0	62	0	31	0	31	0	39	0	39	0	58	0	2	0	60	0	62	0	0	0	62
29	Surat	273	35	0	308	135	0	0	135	94	5	0	99	35	0	0	0	0	35	0	0	0	0	0	0
30	Surendranagar	272	14	52	338	80	0	2	82	6	0	0	6	4	0	0	0	0	4	84	0	0	1	1	86
31	Tapi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Vadodara	25	47	0	72	0	14	0	14	0	0	0	0	0	6	0	0	0	0	4	0	0	0	0	4
33	Valsad	0	0	0	0	0	31	0	31	22	51	0	73	13	65	0	0	0	78	19	47	0	0	0	66

WRV = White-rumped Vulture
LBV = Long-billed Vulture
RHV = Red-headed Vulture
EV = Egyptian Vulture
Un ID = Unidentified

Annexure 4: Site wise and species wise details of vulture estimation - 2016

District	Taluka	Range	Village/City/ Site	Vulture species
Ahmedabad	Ahmedabad	---	Vasana	WRV
		---	Torrent-Cargo Entrance	WRV
		---	Daslana	WRV
		---	Viramgam	WRV
		---	Viramgam	EV
Amreli	Rajula	Rajula	---	WRV
			---	LBV
	Jafarabad	Rajula	---	WRV
			---	RHV
	Dhari	Dalkhaniya	---	LBV
	Khambha	Tulshishyam	---	RHV
			---	LBV
Anand	Khambhat	---	Behind Khija-khiju Dargah	WRV
		---	Trajna	EV
		---	Nagara, village	WRV
		---	Nagara, village	LBV
	Tarapur	---	Jichka and Vadagam	WRV
Banaskantha	Amirgadh	---	Javavadu Forest Bhayla	EV
		---	Talavdi Vera	EV
		---	Pahad Karja	EV
	Danta	---	Divaniyo Pathhar Simbalpani	EV
		---	Kagada Vado Bhag Viramveri	EV
	Disa	---	Panjara	EV
	Palanpur	---	Hasanpur Tekari Palanpur	EV
		---	Mahervada Panjara Pod	EV
		---	Pedagada Gam	EV
		---	Eshariya	EV
		---	Hathidra	EV
Bhavnagar	Mahuva	Mahuva	All areas near Mahuva	WRV
			Bandar Bandharo	LBV
Dang		Gadad Pipalai devi	Hill no. 20, 43, 598	LBV
		Chichli, Pipalai devi	Chichli naku	LBV
		Nakatya hanavat	Nakatya hanavat	LBV
Gandhinagar	Kalol	Dabhala	Dabhala	EV

District	Taluka	Range	Village/City/ Site	Vulture species
Gir Somnath	Sutrapada	Sutrapada	--	LBV
	Talala	Sasan	--	LBV
		Talala	--	LBV
	Gir Gadhada	Babariya	--	LBV
			--	LBV
			--	LBV
			--	LBV
			--	LBV
		Jasadhar	--	RHV
			--	LBV
		Hadala	--	RHV
			--	LBV
Junagadh	Visavadar	Visavadar	--	RHV
			--	LBV
			--	LBV
	Mendarda	Dedakadi	--	RHV
			--	LBV
		Devadiya	--	RHV
			--	LBV
	Bhesan	Dungar North	Kalka no tuk	LBV
	Junagadh	Dungar North	Hedamba no Hichako	LBV
			Bhairav jap ni niche	LBV
			Bhairav jap ni niche	EV
			Bhairav jap ni niche	LBV
			Girnar hill	LBV
			Hedamba no Hichako	RHV
	Maliya	Maliya	Pankva	LBV
			Amrapur	LBV
Kachchh	Abdasa	--	Hajapar	WRV
	Mandvi	--	Nani Khakhar	WRV
		--	Rajpar	WRV
		--	Poladiya	WRV
	Bhuj	--	Kalo Dungar	LBV
	Anjar, Mundra,G'dham	--	Anjar, Mundra, Gandhidham	EV
Mahesana	Kadi	--	Kadi	WRV
		--	Kadi	EV
Mahisagar	Kadana	--	Ghodiyar	EV
		--	Kadana dam	LBV
		--	Kadana dam	EV

District	Taluka	Range	Village/City/ Site	Vulture species
Panchmahals	Halol	Halol	--	LBV
Patan	Patan	--	Patan	EV
Sabarmantha	Vijaynagar	--	Vajan, Agariya dungar	LBV
		--	Abhapur polo camp site, Klariyo dungar	LBV
Surendranagar	Dhrangadhra	--	Chandrasar	WRV
		--	Sitapur	WRV
		--	Bhadar	WRV
		--	Rajchradi	WRV
		--	Methan	WRV
	Patadi	--	Akhaniya	WRV
		--	Malvan	WRV
Vadodara	Paadra	--	Dabka	WRV
		--	Teethor	WRV
Valsad	Kaprada	Kaprada	--	LBV
			--	WRV

Annexure 5: List of major Panjrapoles of the Gujarat State

SN	Name of Panjrapol/Gaushala	District	Taluka	Place
1	Viramgam Khodadhor Panjrapole Sanstha Sanchalit	Ahmedabad	Virmgam	Virpur
2	Mandal Mahajan Panjrapole	Ahmedabad	Mandal	Mandal
3	Kumarkhan Panjrapole	Ahmedabad	Sanand	
4	Purushottam Lalji Galik Sevadham Trust sanchalit Panjrapole	Amreli	Dhari	Kangrasa
5	Shree Jain Shwetamber Murti Pujak Sangh, Khodadhor Panjrapole	Banaskantha	Vav	Vav
6	Shree Tharad Panjrapole Trust	Banaskantha	Tharad	Mahajanpura
7	Deesa Panjrapole	Banaskantha	Deesa	Rajpur
8	Sheth Tharad Panjrapole Trust	Bhavnagar	Mahuva	Chhapriyali
9	Dabhla Panjrapole	Gandhinagar	Kalol	Dhabhla
10	Satadhar Gaushala Trust – Satadhar	Junagadh		Satadhar
11	Shrinathji Gauseva Samaj – Talala	Junagadh		Aankolwadi
12	Shree Mandvi Panjrapole Sanchalit Gaushala	Kachchh	Mandvi	Poladiya
13	Shree Nakhatrana Gauseva Kendra Gaushala	Kachchh	Nakhtrana	Nakhtrana
14	Shree Mathal Gaushala Kendra	Kachchh	Mathal	Mathal
15	Jakhau Panjrapole	Kachchh	Jakhau	Jakhau

SN	Name of Panjrapol/Gaushala	District	Taluka	Place
16	Shree Jivdaya Panjrapole	Kachchh	Rapar	Rapar
17	Shree Bhujpur Panjrapole	Kachchh	Mundra	Bhujpur
18	Shree Moti Rudani Panjrapole	Kachchh	Nakhtrana	Motirudrakshani
19	Shree Panjrapole, Morbi	Morbi		Morbi
20	Shree Panjrapole, Morbi	Morbi		Rafaleshwar
21	The Surat Panjrapole Trust Ghodadod	Surat	Kamrej	Akhakhol
22	Wadhvan Mahajan Panjrapole	Surendranagar	Muli	Ranipat
23	Sv. Dilip Paresh Ashokchandra Shah Sarvajanik Panjrapole	Vadodara	Karjan	Miyagam

About GEER Foundation

Gujarat Ecological Education and Research (GEER) Foundation is an autonomous organization sponsored by the Forests and Environment Department, Government of Gujarat (India). The Foundation, registered as a "Society", is committed to ecological research and awareness. The Foundation has established a wilderness park (Indroda Nature Park) at Gandhinagar, Gujarat. This Park has a zoo, an aviary, a snake park, a dinosaur and fossil park, a marine biodiversity section, a botanical garden, a medicinal plants garden, a cacti house etc.

A large number of area specific ecological and biodiversity status studies and a number of species specific studies have been undertaken by the Foundation, which has also been registered as a scientific institute by the Department of Science and Technology, Government of India. The Foundation is also a member of International Union For Conservation of Nature (IUCN). For ecological monitoring of coastal and marine areas, an Ecological Research & Monitoring Laboratory and five field stations have been established by the Foundation. The Foundation brings out a popular quarterly magazine 'Srushti'.

A regional leader in spreading ecological research and nature education, the Foundation has been organizing about 150 Nature Education Camps for school children every year. It is also managing a Wildlife Sanctuary – Hingolgadh Sanctuary. Moreover, the Foundation is coordinating a national programme viz., National Green Corps (NGC) in Gujarat. The Foundation relays a weekly radio programme titled "Haliyalu Gujarat" on All India Radio.

Gujarat Ecological Education and Research (GEER) Foundation
Indroda Nature Park, P. O. Sector-7, Gandhinagar - 382007, Gujarat, INDIA
Phone : (O) +91-79-23977300, 23977311 Fax : +91-79-23977313
E-mail : dir-geer@gujarat.gov.in; Website: www.geerfoundation.gujarat.gov.in

www.printvision.in