Striped scavengers: Are Hyenas losing their conservation attention?

Bhera ram bishnoi©

FINAL INTERNSHIP REPORT

Aishwarya Laghate
M.Sc. Wildlife Conservation Action Sem IV

Striped scavengers; Are Hyenas losing their conservation attention?

Final Internship Report

5th June – 4th September 2021

Organization: WCB Research Foundation

Submitted by:-

Aishwarya Laghate

Semester IV

M.Sc. Wildlife Conservation Action

Institute of Environment Education and Research
Bharati Vidyapeeth, Pune

CIN : U73200GJ2020NPL116398

WCB Research Foundation

Adding science to conservation

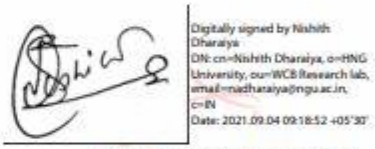
September 4, 2021

CERTIFICATE

This is to certify that ***Aishwarya Laghate,*** *a student of the Masters in Wildlife Conservation Action (M.Sc.) at the Institute of Environment Education and Research, Bharati Vidyapeeth Deemed University, Pune has successfully completed her internship in partial fulfillment for the course at WCB Research Foundation under the mentorship of* ***Dr. Nishith Dharaiya*** *from* ***5th June 2021 to 4th September 2021****.*

She has completed the following tasks in the organization

1. *Performing a Systematic Literature Review for Striped hyena in India*
2. *Performing sentiment analysis of media articles regarding Striped hyena*
3. *Preparing an online questionnaire survey entitled "Study regarding status, awareness levels and threats regarding Striped hyena in India"*
4. *Analysis of the data obtained from literature review and virtual survey*
5. *Designing awareness posters for Community Outreach Program in Gujarat and social media handles*



Dr. Nishith Dharaiya

Co-Chair, IUCN Sloth Bear Expert Team

Founder & Honorary Director of Research, WCB Research Foundation

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Name of student : **Aishwarya Laghate**

Name of organization interning with : **WCB Research Foundation**

Place of internship : **Bhopal, Madhya Pradesh**

Supervisor : **Dr. Nishith Dharaiya**

Duration of internship : **5th June to 4th September 2021**

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1. Introduction

WCB Research Foundation is a non-profit section 8 company registered under the Company's Act (2013), Government of India. The foundation was established on September 10, 2020 with the goal of accelerating action-oriented research and enhancing the capacity of conservation professionals for effective research in the field of wildlife and conservation biology. The organization is committed to science-based conservation and outreach activities through research and development.

The major thrust areas of research at WCB are mammalian ecology and behaviour, habitat evaluation and modelling, wetland biology and monitoring, biodiversity monitoring and environmental biotechnology. The organisation is also engaged in the consultancy work such as biodiversity monitoring, soil and water testing and Environmental Green audits.

The foundation is supported by various national and international organizations and have active collaboration with several reputed organisations such as, Gujarat Forest Department, Gandhinagar, Wildlife and Conservation Biology Research Lab, IUCN Bear Specialist Group, University of Richmond (USA), Bear Trust International, USA and the Institute of nature conservation, Polish Academy of Sciences, Poland. The foundation has recently signed MoU with ENCOSH, the first international exchange platform on Human-Wildlife Conflicts.

Some of the ongoing projects include:

1. Community outreach programme for sloth bear conservation
2. Sloth bear corridor monitoring in central Gujarat
3. Citizen Science Project on Plastic waste management
4. Citizen Science Project on Artificial Nest Box

During the internship period, work is allotted to gather knowledge and research gaps on Striped Hyena (*Hyaena hyaena*) research in India. A detailed Systematic Literature Review for Striped Hyena is the main objective of the study. In addition to this, an effort was also made to generate the awareness and disseminate the knowledge to the community in a pandemic through mass communication such as e-posters and videos on social media platforms.

2.0 Objectives

- To study and analyze potential distribution patterns, dietary habits and threats to Striped hyena in India through available literature.

- To run a sentiment analysis of media articles for Striped hyena.

- To prepare an online questionnaire to identify awareness and threats in public regarding Striped hyena in order to create mass awareness through scientific information.

3.0 Tasks done with method and date

3.1 Task 1: Initial meeting to discuss the focus of study; narrowing down to sub topics for literature review (05.06.2021 – 12.06.2021) (Work from home- WFH)

Method: Post meeting, list of research papers was read to identify research gaps that can be used to develop focus areas of the study. Literature review of papers revealed population distribution and estimation, dietary patterns, threats, perspectives and awareness levels of hyenas as topics that should further be studied.

3.2 Task 2: Entering data into a log frame (14.06.2021- Till present) (WFH)

Method: Data from research papers was entered into a Log Frame made in MS-excel. Log Frame included Title, Introduction, Study Area, Objectives, Broad Methodology, Review of literature (At regional level, national level & international level), Comparing objectives, methodology and outcome of the work) and references.

3.3 Task 3: Scanning newspaper reports and research papers to list Hyena sightings, mortalities and rescues in India (20.06.2021-1.07.2021) (WFH)

Method: Reported sightings in terms of direct signs, photographic evidences, indirect signs (such as pugmarks, scat, hairballs) and research paper findings were tabulated in MS Excel to create a database of Hyena sightings in past 20 years. Location, Latitude and Longitude, Sighting Type (Direct, Indirect Photographic Evidence), Year and Source (Newspaper reports or Research Papers) were entered in the excel database.

Method: Reported sightings in terms of mortalities (roadkills, human-wildlife conflict and poaching) were tabulated in MS Excel to create a database of past 10 years. Location, Latitude and Longitude, Reason of mortality, Year and Source (Newspaper reports or Research Papers) were entered in the excel database.

3.4 Task 4: Perform a sentiment analysis based on news articles/headlines, tweets to analyze perspectives regarding Striped Hyenas (10.07.2021-15.07.2021) (WFH)

Methods: A research method called as sentiment analysis was performed to analyze the general sentiment regarding these natural scavengers. Analysis was done by feeding newspaper headlines, tweets and research articles in an open-source software known as ‘Sentiment Analyzer’ (Daniel Soper).

3.5 Task 5: Preparation of an online questionnaire to check awareness levels in public (17.07.2021-19.07.2021)

Methods: Some previous questionnaire-based surveys on other carnivore species were read in order to frame a similar questionnaire for Striped Hyenas in India. The target audience for this survey is general public. Questionnaire was made with the help of Survey Monkey®.

3.6 Task 6: Preparing awareness posters on Striped Hyenas for social media, school children and tribal community members in Gujarat (3.07.2021-26.08.2021) (WFH)

Methods: Preparation of awareness posters on PowerPoint/Canva for social media handles as well as community outreach programs.

3.7 Task 7: Reframing the online questionnaire and sending out trial surveys for dummy data (1.08.2021 – 20.08.2021)

Methods: Using SurveyMonkey® as a tool to fill in questions after multiple rounds of rechecking and reframing the question set.

3.8 Task 8: Analysis and mapping of survey and systematic literature review results (29.08.2021-3.09.2021)

Methods: Analyzing results obtained from the questionnaire survey in SurveyMonkey® and Microsoft Excel. Followed by mapping the data by using QGIS software.

Other accomplishments

Certificate Courses from National Geography on topics related to “Prioritizing Species & Spaces” and “Understanding Illegal Wildlife Trade”.

Certificate Course on Environmental Crimes and Conservation Studies by Jindal Institute of Behavioural Sciences.

Webinar Participation Certificate of "International Day for Biological Diversity", 22 May 2021 jointly organised by ENVIS Resource Partners Wildlife Institute of India (WII), Dehradun and World Wildlife Fund (WWF) India, New Delhi.

Certificate of Appreciation on Quiz for International Day for Biological Diversity organized Madhya Pradesh Tiger Foundation Society (MPTFS).

Created written content for posters in collaboration with MP Forest Department and Madhya Pradesh Tiger Foundation Society (MPTFS).

Selection of thesis short film; “Chirps from the rice fields” in Good Natured- A Conservation Optimism Film Festival

4.0 Outputs

Output 1: Initial meetings to discuss the focus of study; zoom meeting sessions.

Date	Meeting	Duration
20th May 2021	**Meeting 1**	**30 minutes**
5th June 2021	**Meeting 2**	**40 minutes**
22nd July 2021	**Meeting 3**	**2 hours**
24th July 2021	**Meeting 4**	**1 hour**
12th August 2021	**Meeting 5**	**40 minutes**
31st August 2021	**Meeting 6**	**2 hours**

Output 2: Entering data in Log Frame in Excel for all the research papers reviewed.

Log Frame included Title, Introduction, Study Area, Objectives, Broad Methodology, Review of literature (At regional level, national level & international level), Comparing objectives, methodology and outcome of the work) and references.

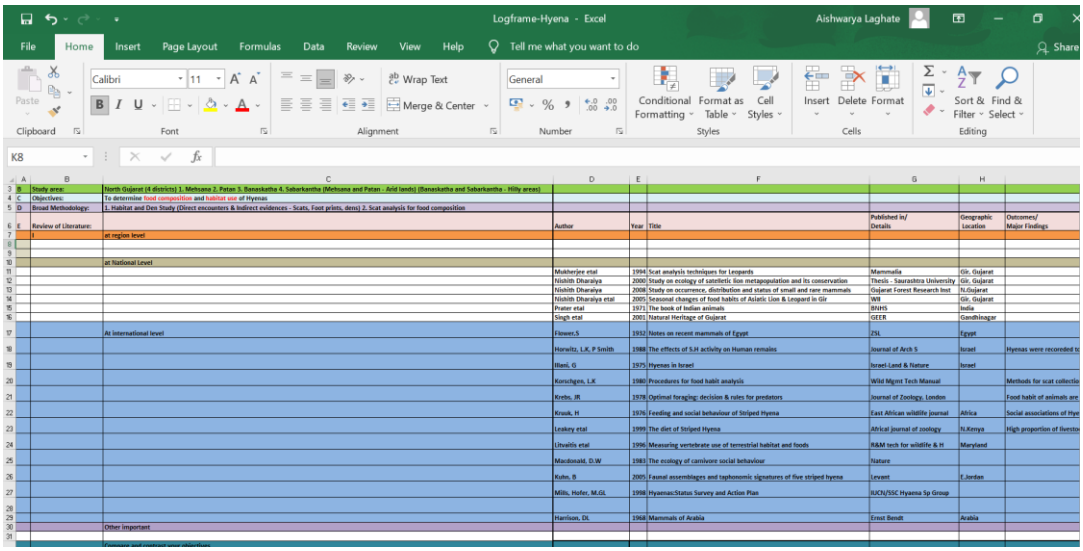


Figure 1: Entering data in a log frame prepared in Ms Excel

The research papers reviewed showed that the majority of the studies for Striped hyena were performed in the states of Gujarat and Rajasthan respectively; followed by few areas of Uttarakhand and Maharashtra. The least number of studies were from states of Orissa and West Bangal. This explains the lack of proper estimation of Hyena population all over India.

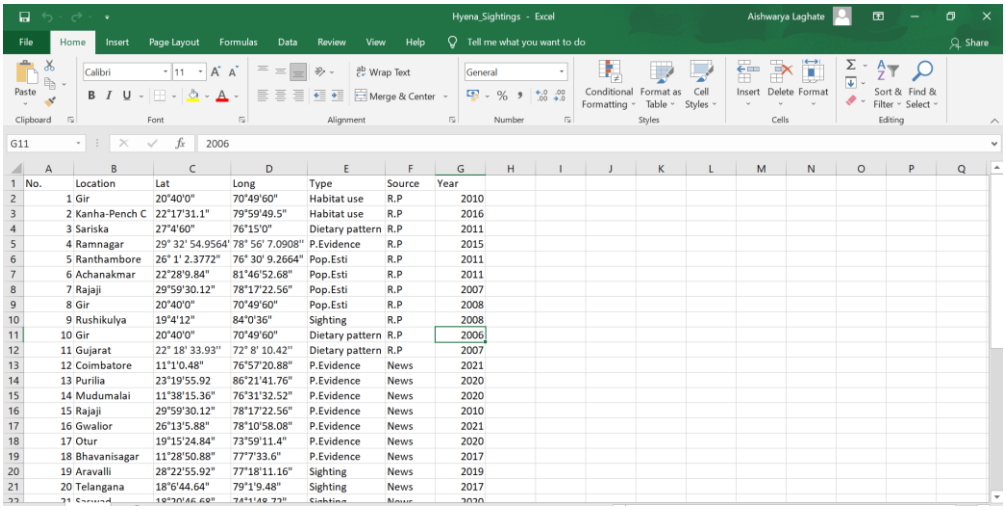
Moreover, the studies focused on population estimation, suitable habitats, dietary patterns using scat analysis,den ecology and occassional photographic evidences.

The gaps observed through this literature review include lack of estimated population and distribution patterns, assessment of threats (human-wildlife conflict, negative perceptions, loss of prey-base), behavioural ecology, vocalizations and a concrete baseline data for the species in India. This requires urgent need for documenting data for the same.

This baseline data will further help to create hotspots of Hyena habitats and analyse the possible threats and create a conservation action plan or framework for the species.

Output 3 : Scanning newspaper headlines and research papers to list Striped Hyena sightings and mortalities

Listing the sightings with location, latitude, longitude, source (Research Paper or Newspaper articles) year, yype and sex identified of the animal in MS Excel. Further preparing a map on Hyena sightings in Qgis software.

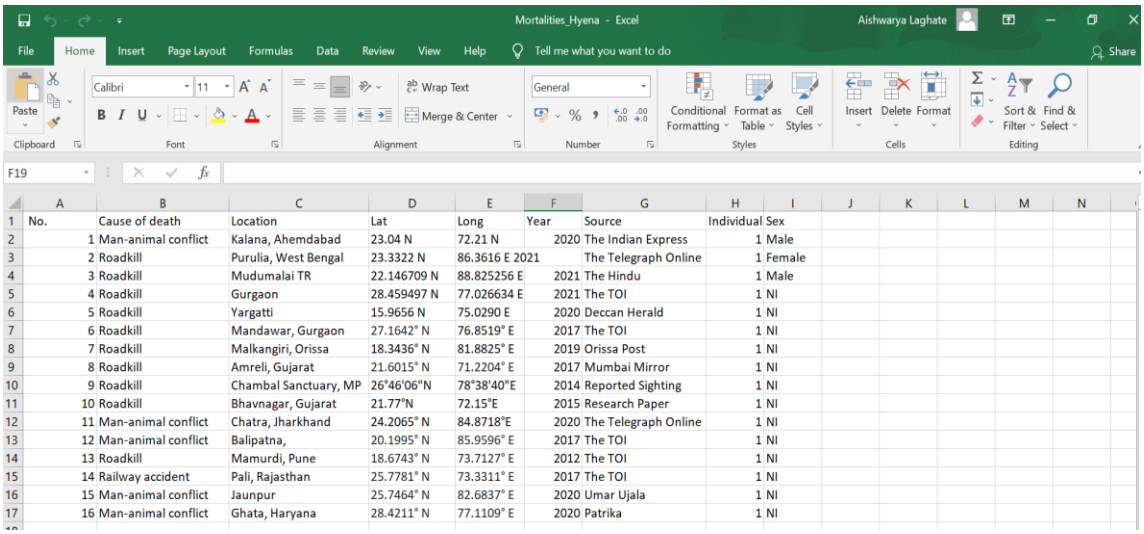


No.	Location	Lat	Long	Type	Source	Year
1	Gir	20°40'0"	70°49'60"	Habitat use	R.P	2010
2	Kanha-Pench C	22°17'31.1"	79°59'49.5"	Habitat use	R.P	2016
3	Sariska	27°4'60"	76°15'0"	Dietary pattern	R.P	2011
4	Ramnagar	29° 32' 54.9564'	78° 56' 7.0908"	P.Evidence	R.P	2015
5	Ranthambore	26° 1' 2.3772"	76° 30' 9.2664"	Pop.Esti	R.P	2011
6	Achanakmar	22°28'9.84"	81°46'52.68"	Pop.Esti	R.P	2011
7	Rajaji	29°59'30.12"	78°17'22.56"	Pop.Esti	R.P	2007
8	Gir	20°40'0"	70°49'60"	Pop.Esti	R.P	2008
9	Rushikulya	19°4'12"	84°0'36"	Sighting	R.P	2008
10	Gir	20°40'0"	70°49'60"	Dietary pattern	R.P	2006
11	Gujarat	22° 18' 33.93"	72° 8' 10.42"	Dietary pattern	R.P	2007
12	Coimbatore	11°1'0.48"	76°57'20.88"	P.Evidence	News	2021
13	Purilia	23°19'55.92	86°21'41.76"	P.Evidence	News	2020
14	Mudumalai	11°38'15.36"	76°31'32.52"	P.Evidence	News	2020
15	Rajaji	29°59'30.12"	78°17'22.56"	P.Evidence	News	2010
16	Gwalior	26°13'5.88"	78°10'58.08"	P.Evidence	News	2021
17	Otur	19°15'24.84"	73°59'11.4"	P.Evidence	News	2020
18	Bhavanisagar	11°28'50.88"	77°7'33.6"	P.Evidence	News	2017
19	Aravalli	28°22'55.92"	77°18'11.16"	Sighting	News	2019
20	Telangana	18°6'44.64"	79°1'9.48"	Sighting	News	2017

Figure 2: Entering data from newspaper reports and research papers for Hyena Sightings

Output 3.1: Scanning newspaper headlines and research papers to list Hyena mortalities and rescues (Past 10 years)

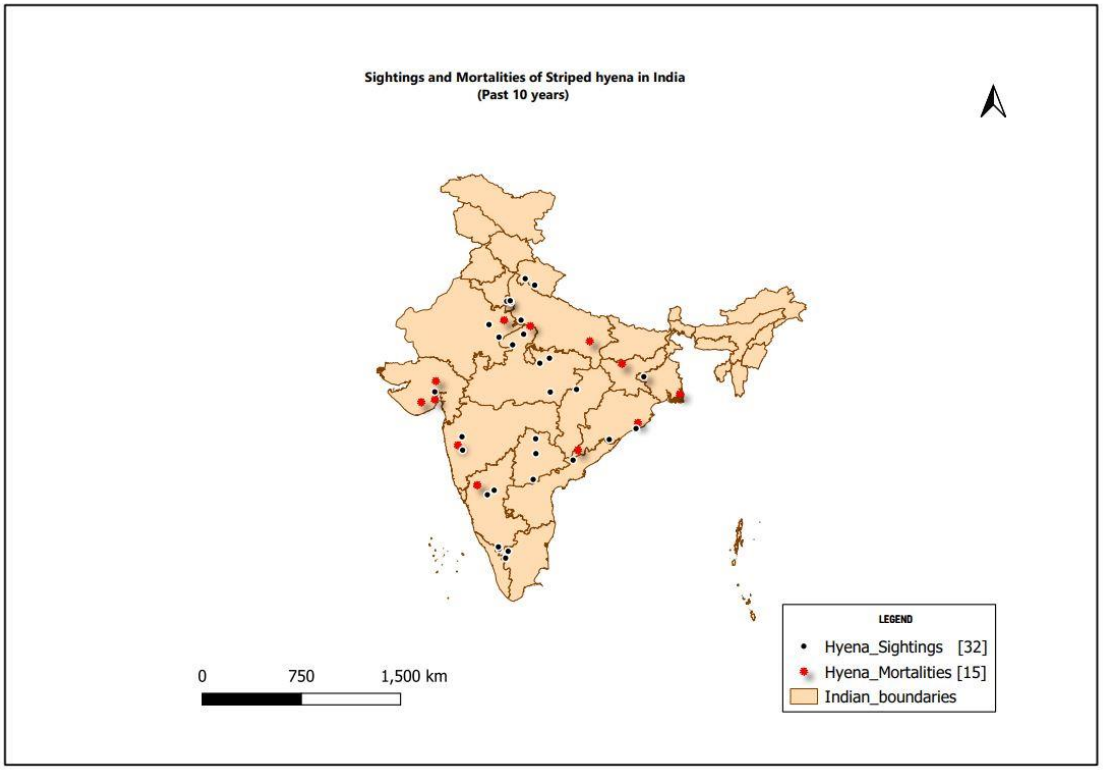
Listing the Hyena mortalities with location, latitude, longitude, source (Newspaper headlines and Research Papers), reason of mortality (Roadkill, human-wildlife conflict or poaching) and year.

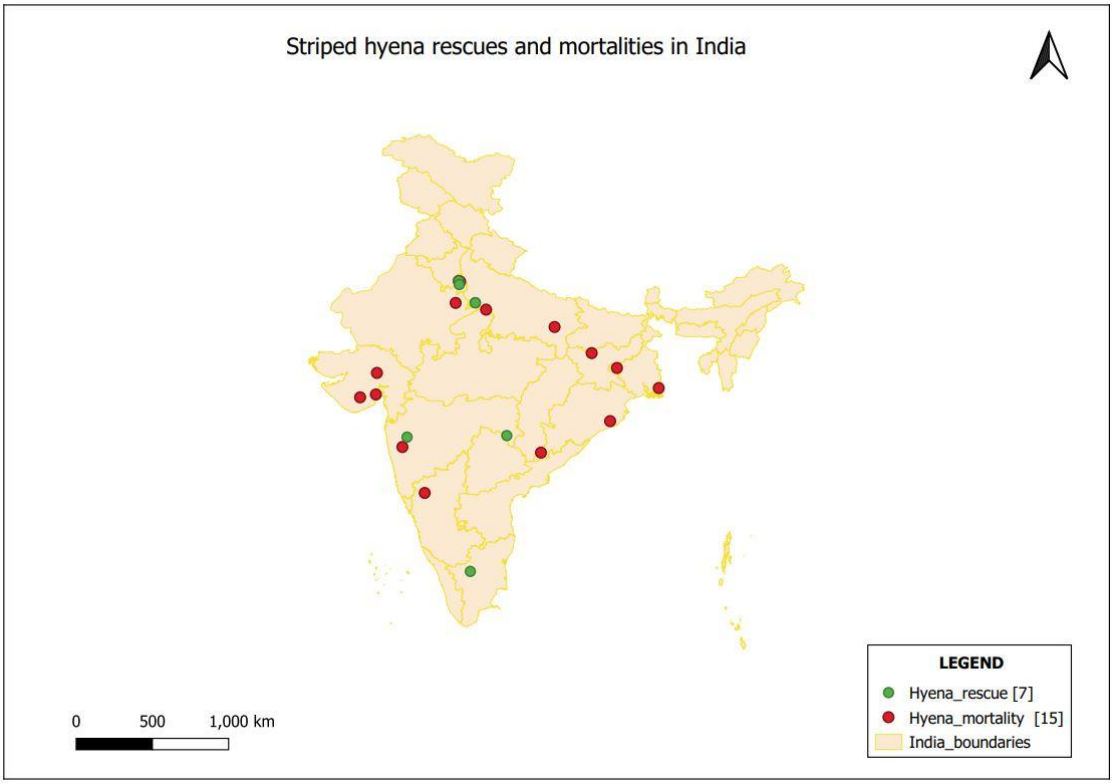


Mortalities_Hyena - Excel — Aishwarya Laghate

No.	Cause of death	Location	Lat	Long	Year	Source	Individual	Sex
1	Man-animal conflict	Kalana, Ahemdabad	23.04 N	72.21 N	2020	The Indian Express	1	Male
2	Roadkill	Purulia, West Bengal	23.3322 N	86.3616 E	2021	The Telegraph Online	1	Female
3	Roadkill	Mudumalai TR	22.146709 N	88.825256 E	2021	The Hindu	1	Male
4	Roadkill	Gurgaon	28.459497 N	77.026634 E	2021	The TOI	1	NI
5	Roadkill	Yargatti	15.9656 N	75.0290 E	2020	Deccan Herald	1	NI
6	Roadkill	Mandawar, Gurgaon	27.1642° N	76.8519° E	2017	The TOI	1	NI
7	Roadkill	Malkangiri, Orissa	18.3436° N	81.8825° E	2019	Orissa Post	1	NI
8	Roadkill	Amreli, Gujarat	21.6015° N	71.2204° E	2017	Mumbai Mirror	1	NI
9	Roadkill	Chambal Sanctuary, MP	26°46'06"N	78°38'40"E	2014	Reported Sighting	1	NI
10	Roadkill	Bhavnagar, Gujarat	21.77°N	72.15°E	2015	Research Paper	1	NI
11	Man-animal conflict	Chatra, Jharkhand	24.2065° N	84.8718°E	2020	The Telegraph Online	1	NI
12	Man-animal conflict	Balipatna,	20.1995° N	85.9596° E	2017	The TOI	1	NI
13	Roadkill	Mamurdi, Pune	18.6743° N	73.7127° E	2012	The TOI	1	NI
14	Railway accident	Pali, Rajasthan	25.7781° N	73.3311° E	2017	The TOI	1	NI
15	Man-animal conflict	Jaunpur	25.7464° N	82.6837° E	2020	Umar Ujala	1	NI
16	Man-animal conflict	Ghata, Haryana	28.4211° N	77.1109° E	2020	Patrika	1	NI

Figure 3: Entering data from newspaper reports and research papers for Hyena Mortalities





Output 4: Sentiment Analysis

Sentiment Analysis was performed in an open-source software called as “Sentiment Analyzer” (Daniel Soper). A total of 30 newspaper headlines were scanned and used as a text in the analyzer. Only headlines with keyword “Hyena” were used in the analysis. Headlines were extracted through

Google news. The text showed a sentiment score of **-59.7** which indicates the overall sentiment or the tone of this text is **quite negative/serious**.

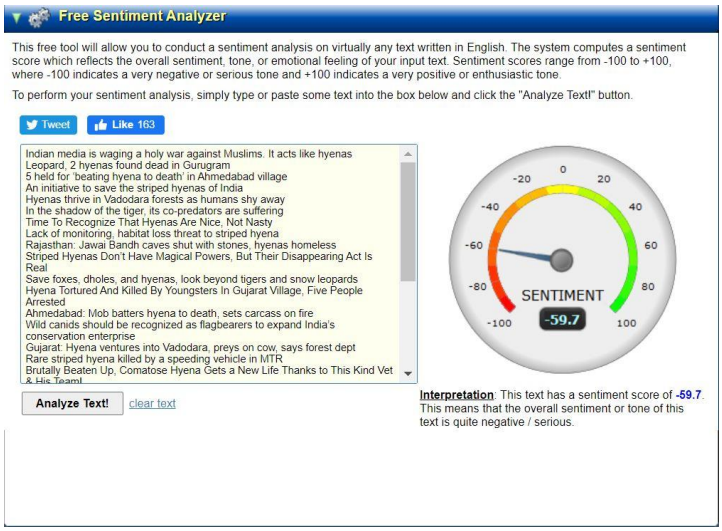
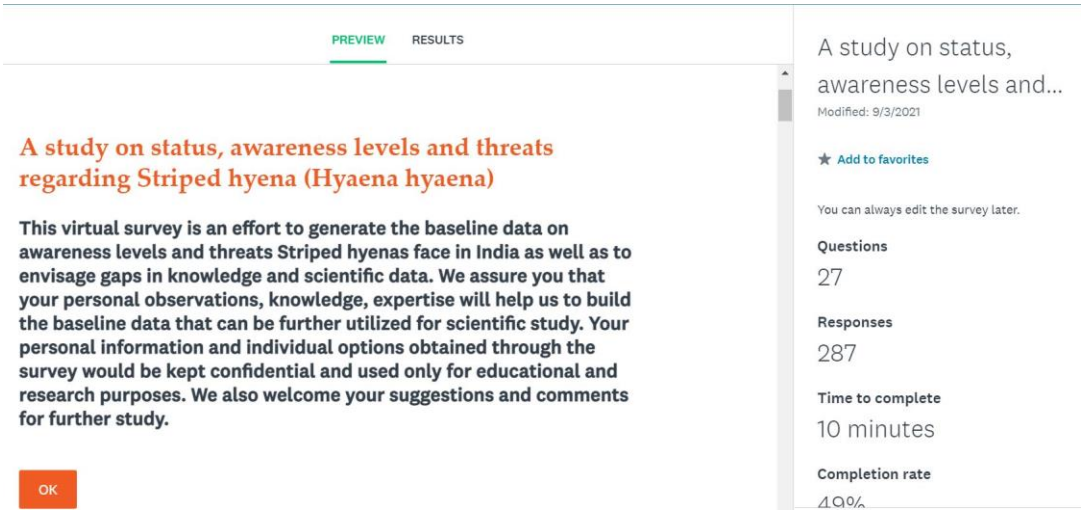
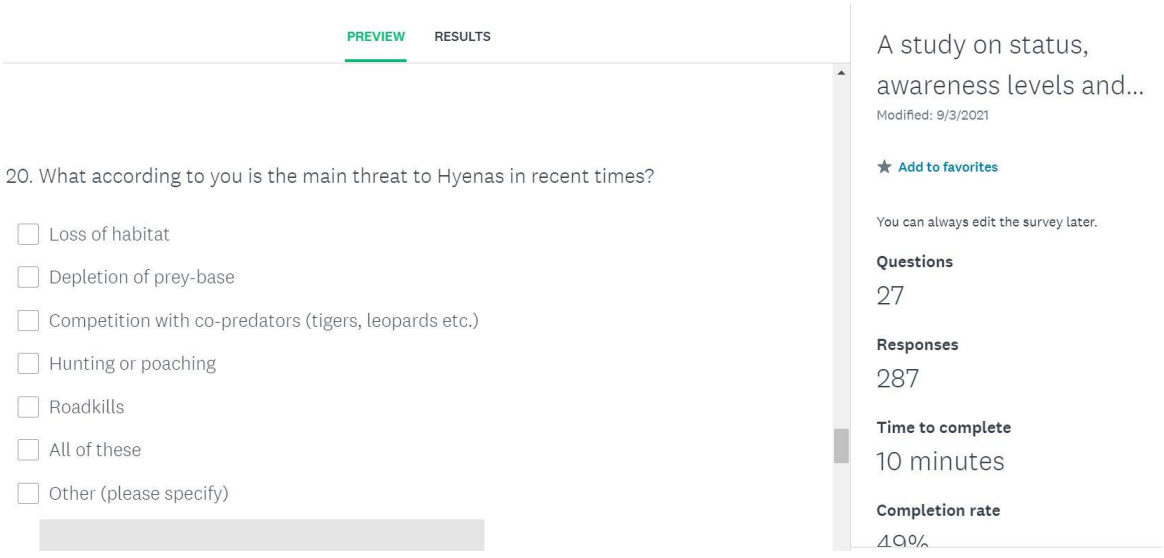


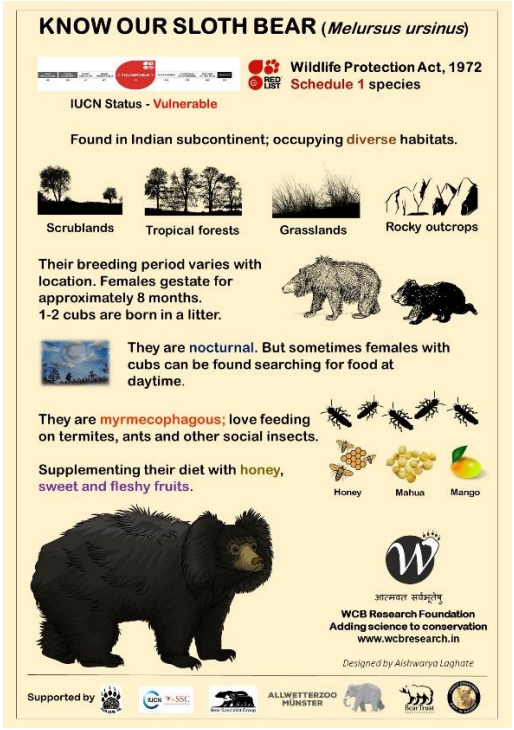
Figure 5: Interpretation of Sentiment Analyzer

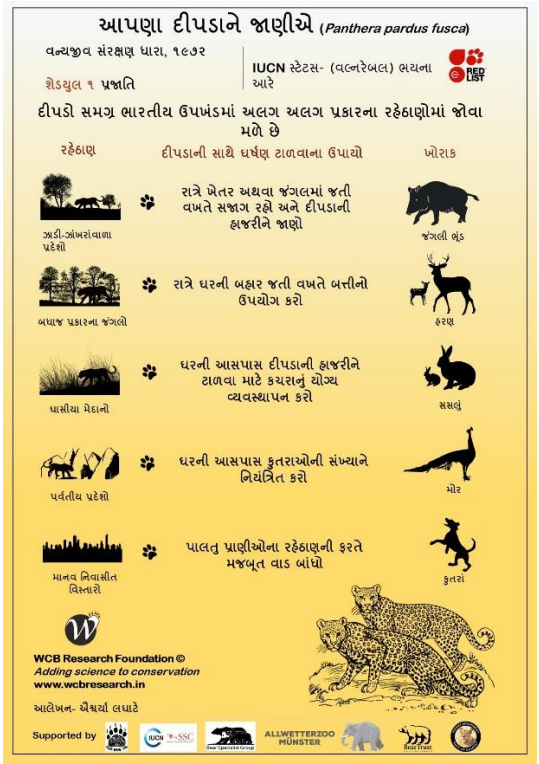
Output 5: Preparation of online questionnaire survey by using SurveyMonkey® tool.

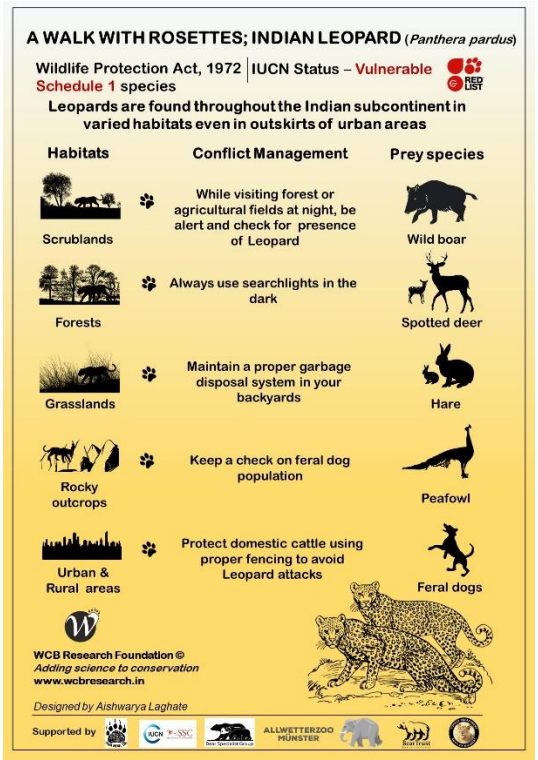




Output 6: Preparation and designing the awareness posters on Hyena, Sloth bear and Leopard for Conservation Outreach Program of WCB Research Foundation







Output 7: Trial questionnaire survey

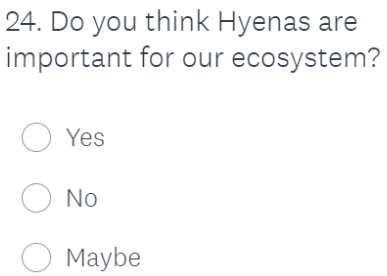
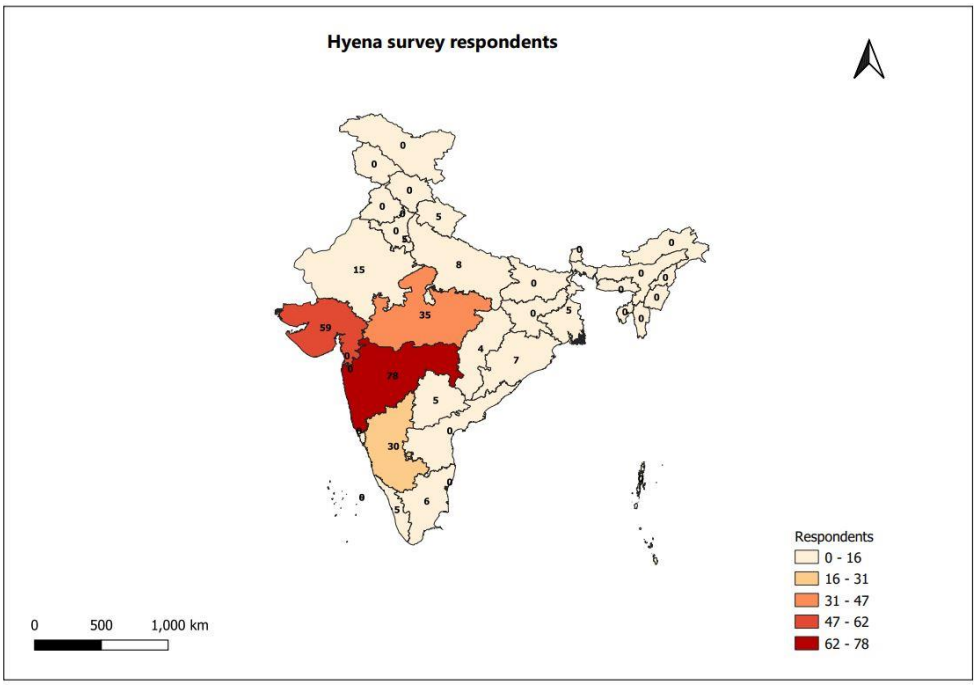


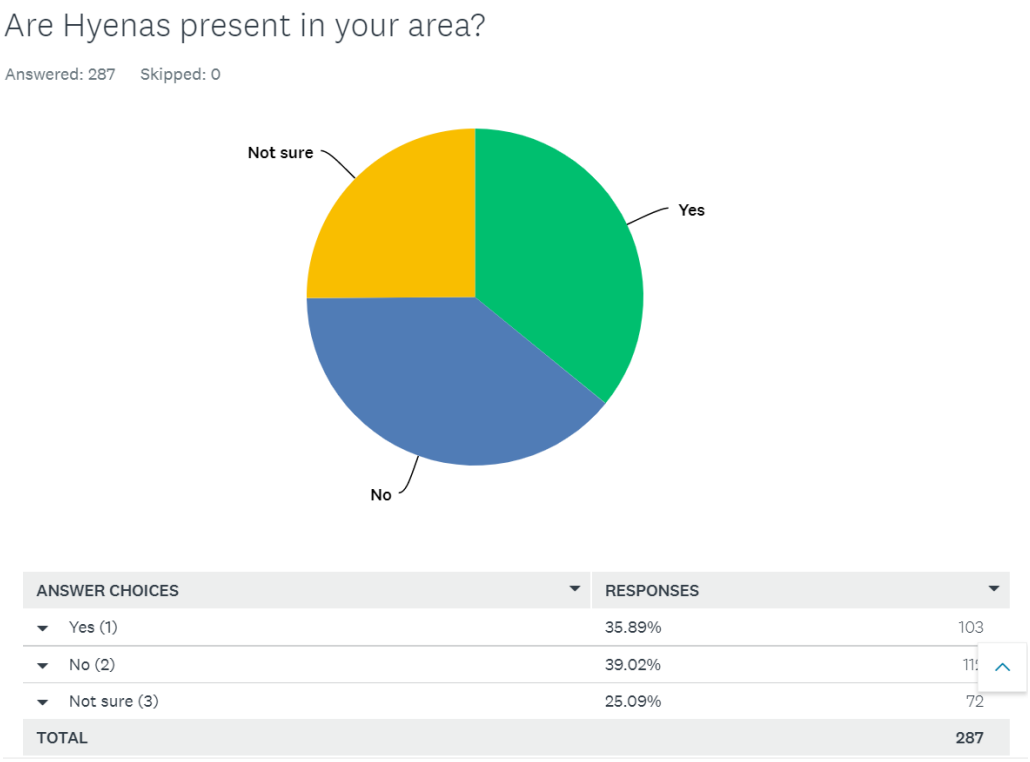
Figure 8: Sending out questionnaire survey for trial

Output 8: Analysis of the online questionnaire survey

1. Respondents all over India (n=287)



2. Hyena presence in area



ANSWER CHOICES	RESPONSES	
Yes (1)	35.89%	103
No (2)	39.02%	11
Not sure (3)	25.09%	72
TOTAL		287

Figure 10: Hyena presence in respondent's area

103 respondents chose YES option; saying that Hyenas are present in their area. 72 respondents chose NO option. Whereas 112 respondents chose "Not sure" option. This indicates people are not aware whether Hyenas are present in their area or not.

3. Hyena was seen in which habitat (as per respondents)

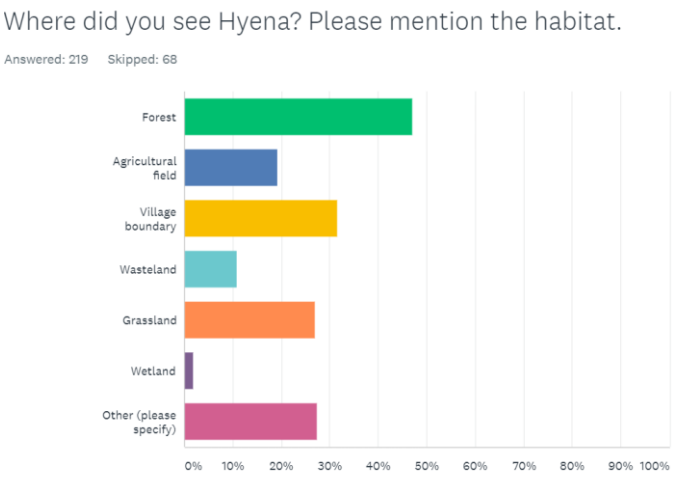


Figure 11: Hyena's habitat as per respondents

Respondents from the previous question who had seen Hyena say that the animal was found in Forest habitat continued by Village boundary and others. Forested habitat and village boundary in the results give us insights on Hyena behavior. It is normally found where there is availability of carcass, agricultural fields and garbage dumps to scavenge upon.

4. Hyena occurrence

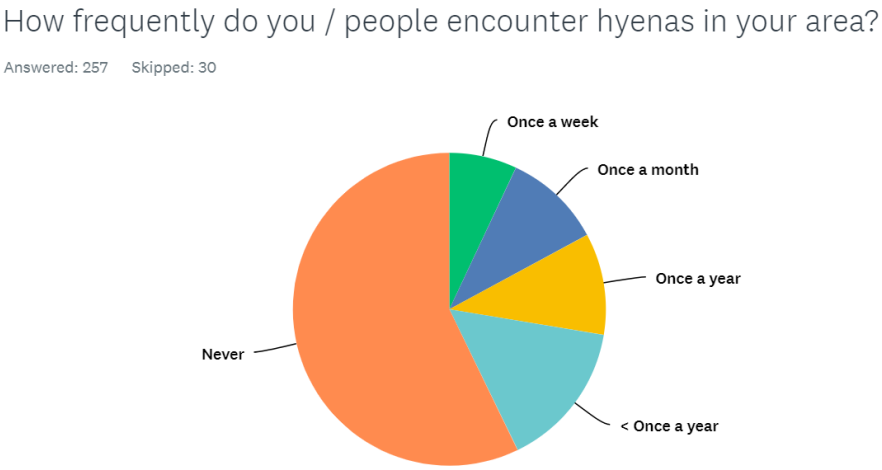


Figure 12: Hyena presence

The highest percentage of respondents chose “Never” option which indicates that frequency of Hyena encounter is very less; possibly because the animal is nocturnal in nature and people are not

aware of its presence in surroundings. Also, some areas do not have Hyena distribution.

5. Hyena is encountered frequently in which habitat?

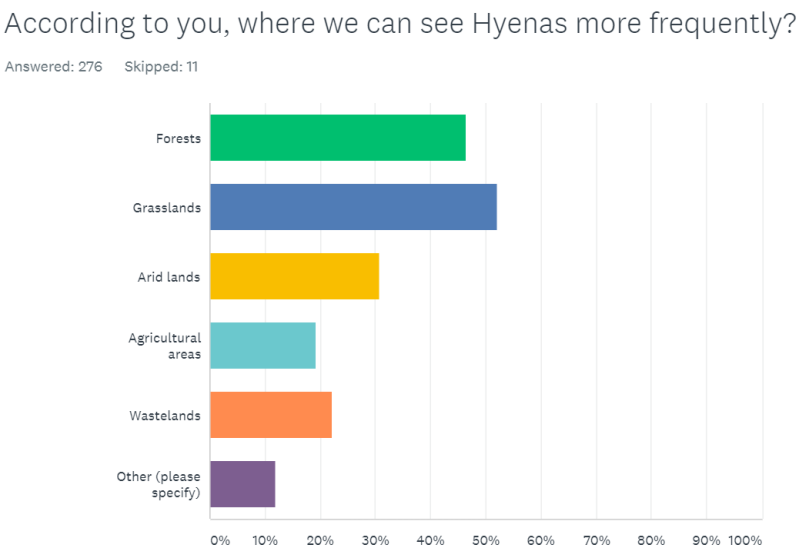


Fig 13: Hyena occurrence in varied habitats

More than 50% respondents believe that Hyenas are found in Grassland habitat followed by forests and

arid lands indicating that these are ideal landscapes where the animal is normally distributed (in pockets of Maharashtra, Gujarat and Rajasthan).

6. Feeding nature of Hyena

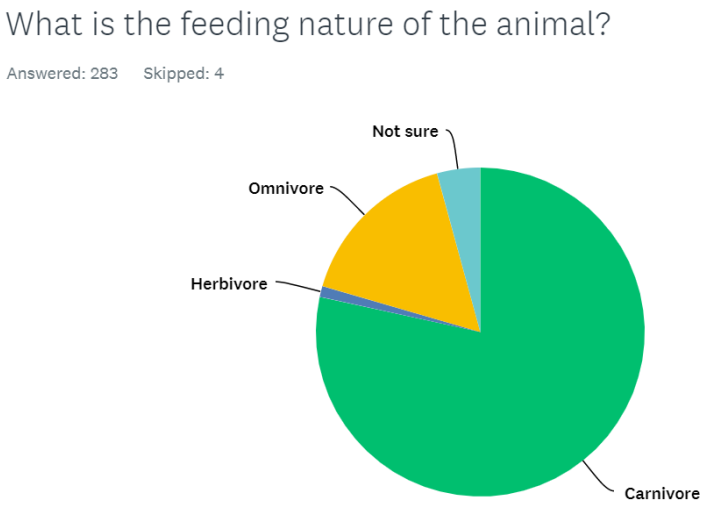


Figure 14: Feeding nature of Hyena

The highest percentage of “Carnivore” option indicates that audience knows that Hyena is a scavenger feeding on dead and decaying matter; “Omnivore” option also proves that it seldom supplements its diet by seeds of fruits and vegetables as well as plant matter.

7. Diet preferences of Hyena

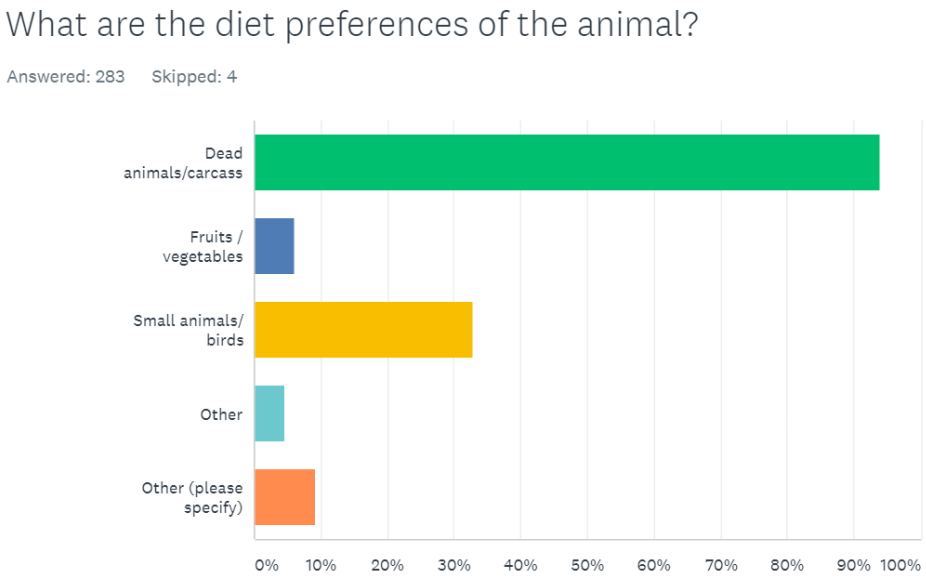


Figure 15: Diet preferences of Hyena

Respondents voted for “Dead animals/ carcass” option proving that Hyenas are primarily scavengers. Often an opportunistic feeder hunting small animals and birds.

8. Hyena population increased/ decreased according to respondents

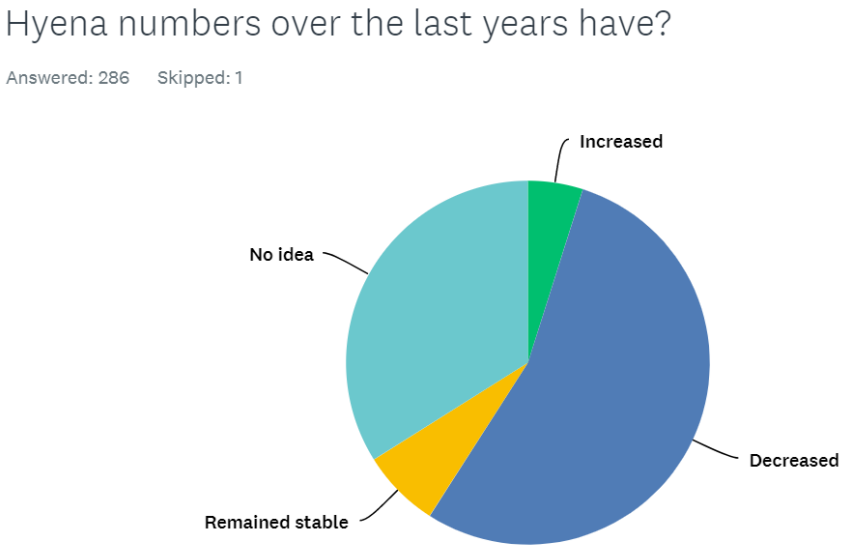


Figure 16: Hyena status as per respondents

Respondents voted for “Decreased” option showing that Hyena population have considerably lowered.

10. Main threat to Hyena

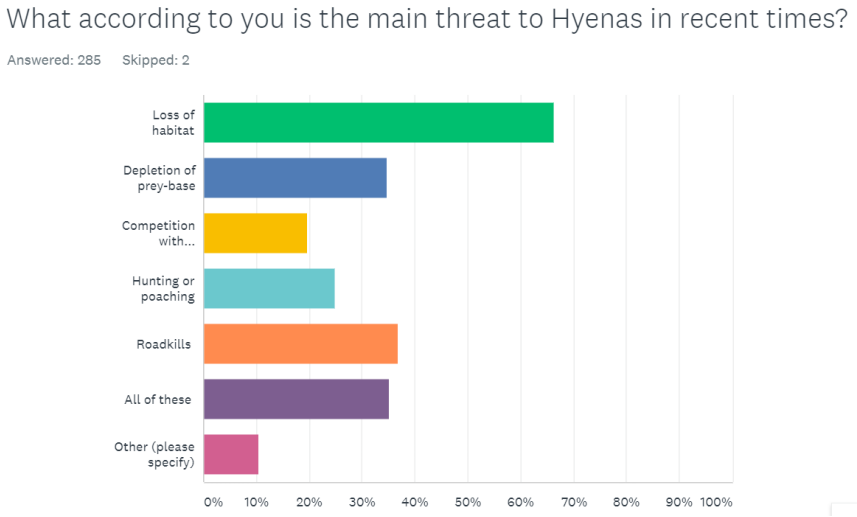


Figure 17: Main threat to Hyena

Respondents voted for "Loss of habitat" option as the main threat to Hyena; this also proves that Hyena habitats are being converted into agricultural areas or developmental projects as majoity of Hyena habitats lie in arid landcapes or grasslands which are often treated as "landscapes".

11. Are Hyenas killed in respondent's area? If yes, Why?

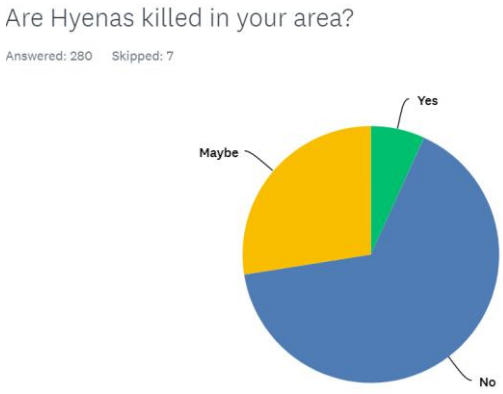


Figure 18: Hyena killed in respondent's area

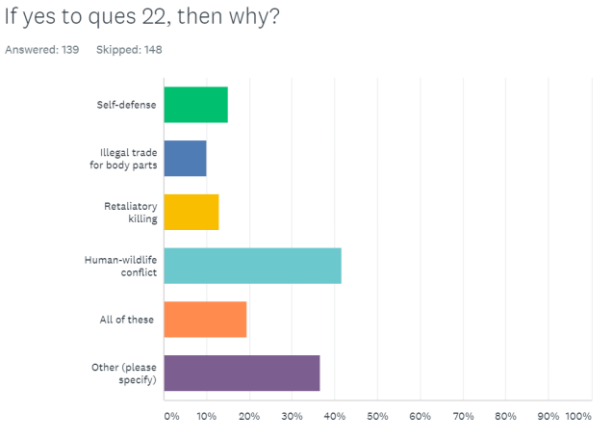


Figure 19: Reason of killing

An interesting answer came out of this question where respondents who voted “YES” explained the major reason why Hyenas were killed in the area was because of “Human-wildlife conflict”. This also throws some
light on “evil” image of the animal which needs to be improved by conservation awareness initiatives.

12. Are Hyenas important for our ecosystem?

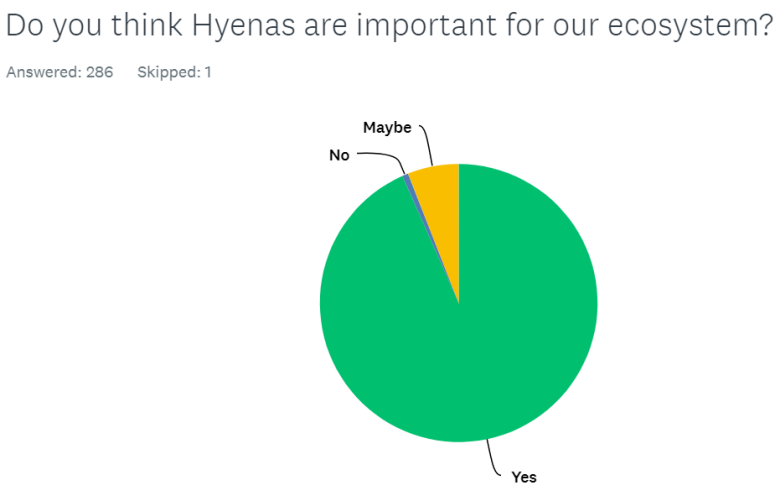


Figure 20: Hyena's importance for ecosystem

Majority of respondents voted for "YES" which explains they consider Hyenas as an important part of the ecosystem. Majorly because they are efficient scavengers which help in cleaning off dead and decaying carcasses further preventing spread of zoonotic diseases.

13. Do Hyenas need protection?

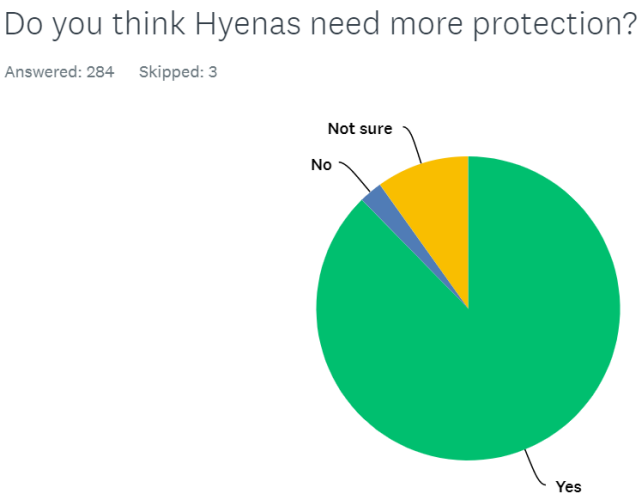


Figure 21: Protection status

"YES" was voted in majority for this question which explains Hyenas; co-predators of large carnivores are highly ignored in our country and are in dire need of protection and recognition; thereby a conservation action plan should be formed; firstly, to map the potential distribution of the animal.

Learnings during the internship

Work Experience

I worked with WCB Research Foundation as a Research Intern for three months. Owing to the pandemic, the internship was completed virtually. Despite being a virtual one, I have thoroughly enjoyed working with the organization for three months. During this time-course, I was handed over various tasks which helped me to polish my skills; even learn new ones. I was assigned a project to review the available scientific information on Striped hyena (Hyaena hyaena) in India and to assess the knowledge gaps and myths about this species prevailing among the local community.

Following tasks were assigned to me during the internship program:
1. To conduct Systematic Literature Review on Striped hyena.
2. Mapping of Hyena sightings, mortalities and rescues in past ten years across India through secondary data.
3. Designing and circulating a virtual survey to assess "Status, awareness levels and threats to Striped hyena in India".
4. To assist other ongoing projects of the WCB Research Foundation especially for designing awareness posters for community outreach and conservation education programs in Gujarat.

Skills acquired:

1. Communication
The ability to effectively convey my ideas and thoughts to my supervisor and co-workers.

2. Interpersonal skills
My daily tasks involved working as a team which required communicating my thoughts/feedback or suggestions to my supervisor/co-workers and interns who were part of the organization. I have polished myself in presenting my ideas as well as listening to various perspectives and feedbacks my teammates gave me during these three months.

3. Collaboration
Being a team working for achieving the same goal, I have learned to work collaboratively. This includes knowing our strengths and weaknesses as a team. To achieve a target, you have to push yourself and your teammates by following up with tasks, sending reminders, constructive criticism, and acknowledgment.

4. Time Management
As I was working on various tasks during the course of my internship, I learned the art of multi-tasking, effectively managing my time and made sure that the results are produced on the same day as expected. Be it data collection/analysis for the Hyena project or completion of posters to be circulated.

Academic and scientific purpose

The tasks assigned to me enhanced my skills in academia and scientific context. I discovered new study designs, methodologies, and trends to study mammals which were very new to me as I always studied avifauna in general. Studying and collecting data for a lesser-known animal like Hyena in India has given me the opportunity to identify gaps in knowledge and create baseline data for the species. I wish to pursue the subject and perform fieldwork to gather data about the status and distribution of Hyenas in India, creating citizen science initiatives to record Hyena observations, threats, and people perceptions, busting myths about scavengers and developing a conservation action plan for the species. I truly feel this internship has helped me to narrow down my interests and choose a path for my future career leading to Ph.D.

Skills acquired:

1. Critical thinking
   While designing an online questionnaire survey for Hyenas, there were multiple angles that needed to be looked at. As the survey was open to the general public as well, everything had to be questioned and properly drafted to create a survey that need not be too hard for a layman to fill. I had various brainstorming sessions with my supervisor, where we were twisting and re-creating questions. This process also helped me to think about the various answers people might answer and how will I categorically analyze them.

2. Research & Analysis
   During the course of my internship, I collected secondary data on Hyenas to gather more knowledge on their status, distribution, feeding habits, threats, myths associated, and conservation initiatives. I analyzed the data collected from research papers and newspapers to form maps on Hyena sightings, mortalities, and rescue in the last 10 years. I also analyzed a total of 284 responses which I received as a part of my Hyena survey using a virtual tool SurveyMonkey®.

3. Technical Proficiency
   For performing the daily tasks I used softwares which are mentioned below:
   1. Microsoft Office: Documentation, data management and presentation
   2. DS Sentiment Analyzer: Sentiment Analysis
   3. QGIS: Mapping
   4. Canva: Designing
   5. Sketchable: Sketching Illustrations
   6. Survey Monkey®: A virtual tool to conduct survey

Areas of improvement:

1. Proficiency in Statistical analysis
2. Proficiency in softwares like R, MARK, Distance, and MAXENT

Social and cultural experience

WCB Research Foundation offered me a positive environment to work in throughout the internship period. My supervisor and co-workers have always appreciated and critiqued my work; to bring out the best in me.

Skills acquired:

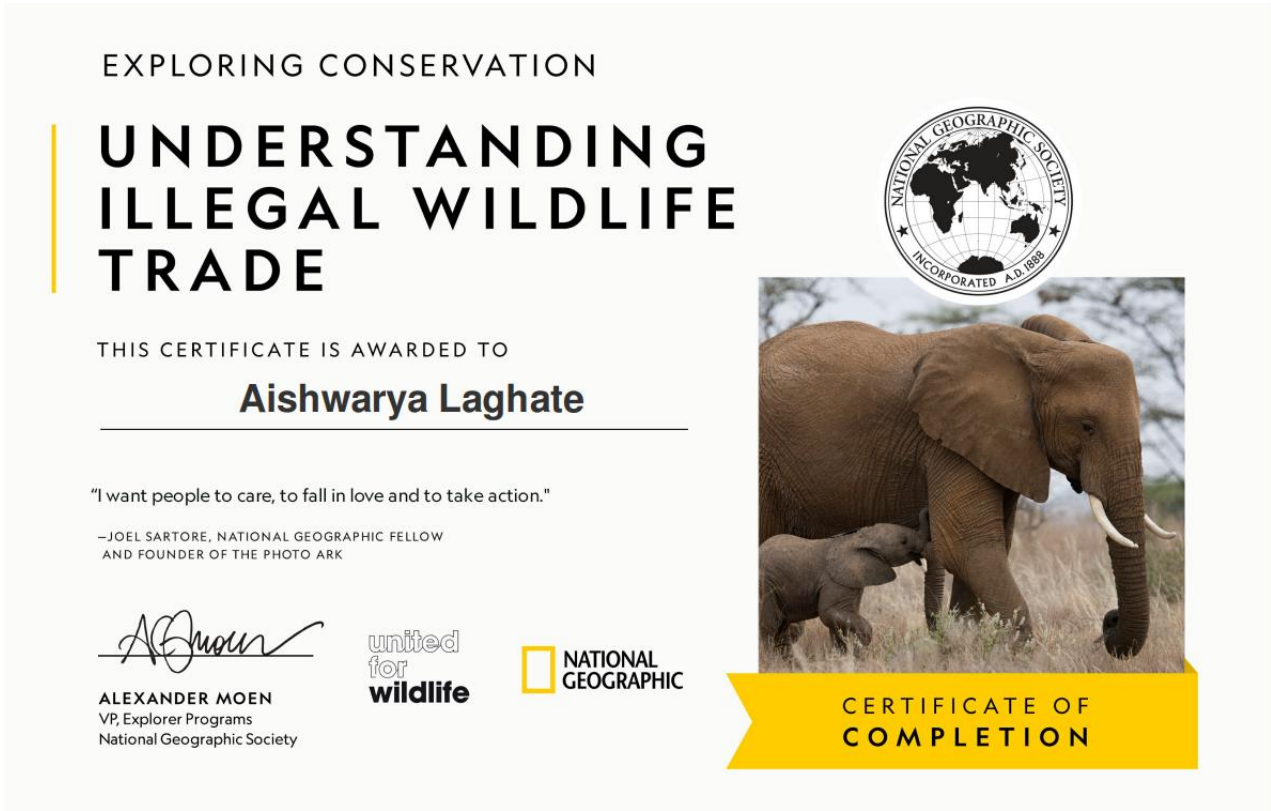
1. Networking

Not only did I make connections in WCB; but also, when I circulated my Hyena survey across social media handles. I managed to make quick connections with wildlife enthusiasts, photographers, filmmakers, researchers and NGO's who spared time to fill out the survey; speaking of which have definitely helped me expand my social circle.

2. Knowledge enhancement

WCB Research Foundation organized WCBinars (Webinars) every month to enhance knowledge of trending topics in research and conservation. There were webinars on Eco-restoration, Following patterns; to find missing biogeographical path mystery, Q-method in social science surveys. These monthly webinars were something to look for every month and learn new things.

Other accomplishments



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Certificate

This Certificate has been awarded to

Mr./Ms./Dr./Prof. MS. AISHWARYA LAGHATE

for successfully completing the online
Certificate Course on Environmental Crimes & Conservation Studies
conducted by Jindal Institute of Behavioural Sciences (JIBS), O.P. Jindal Global University
21-22 May 2021

Professor (Dr.) Sanjeev P. Sahni
Principal Director, JIBS

Ministry of Environment, Forest and Climate Change Government of India

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

WWF

Participation Certificate

Aishwarya Laghate

have participated in the webinar on occassion of International Day for Biological Diversity, 22 May 2021 jointly organised by ENVIS Resource Partners Wildlife Institute of India (WII), Dehradun and World Wildlife Fund (WWF) India, New Delhi.

[Dr. K. Sivakumar]
Scientist-F & ENVIS Coordinator
Wildlife Institute of India

[Dr. G. Areendran]
Coordinator, WWF ENVIS
WWF-India, New Delhi

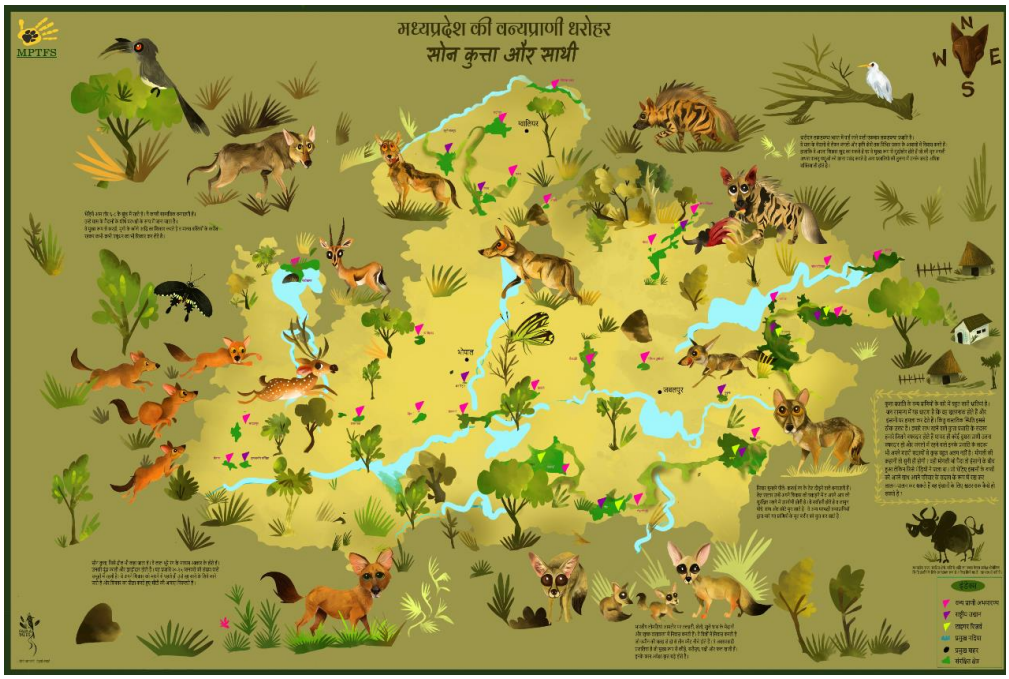
MPTFS Biodiversity Quiz 2021

Certificate of Appreciation

This is to certify that Mr. / Ms. **Aishwarya Laghate** has participated in the **"MPTFS Biodiversity Quiz 2021"** organized by MP Tiger Foundation Society in May 2021 to create awareness among the common public for the cause of Wildlife conservation. MPTFS appreciates the participation and wishes them all the best for future endeavours.

Date : 22nd May 2021
Place : Bhopal

Secretary
Madhya Pradesh Tiger Foundation Society



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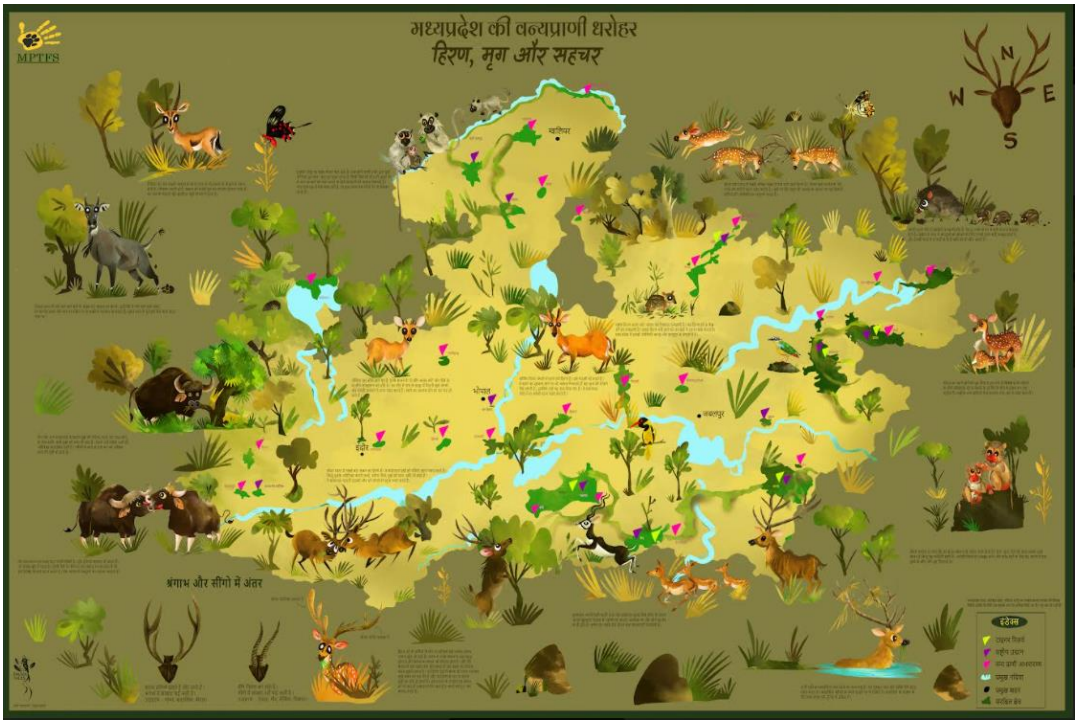
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Chirps from the rice fields
OFFICIAL
SELECTION
GOOD NATURED
CONSERVATION
OPTIMISM
FILM FESTIVAL
2021
By Aishwarya Laghate