ಕರ್ನಾಟಕ ಅರಣ್ಯ ಇಲಾಖೆ

ಮುಖ್ಯ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿಗಳ ಕಛೇರಿ ಧಾರವಾಡ ವೃತ್ತ, ಧಾರವಾಡ,

ಅರಣ್ಯ ಸಂಕೀರ್ಣ ಕೆ.ಸಿ.ಪಾರ್ಕ ಎದುರಿಗೆ, ಪಿ.ಬಿ.ರಸ್ತೆ, ಧಾರವಾಡ-580008
Phone:(Off) - 0836- 2448501 email: cfdcdwd@yahoo.co.in

ಸಂ. A1/LAND /GFL/B/SGM/JALLIGERI/CR-01/2024-25. 1036 ದಿನಾಂಕ:09.09.2024

ಗೆ,

ಪ್ರಧಾನ ಮುಖ್ಯ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿಗಳು,
(ಅರಣ್ಯ ಸಂರಕ್ಷಣೆ) ಮತ್ತು ನೋಡೆಲ್ ಅಧಿಕಾರಿಗಳು,
ಅರಣ್ಯ ಭವನ, 18 ನೇ ಕ್ರಾಸ್, ಮಲ್ಲೇಶ್ವರಂ,
ಬೆಂಗಳೂರು.

ಮಾನ್ಯರೇ,

ವಿಷಯ: Diversion of 39.90 ha. (30.7 ha. Mining lease and 0.20 ha. Of approach road) of forest land in sy.No.45,49 & 50 of Jelligeri village, Kasaba Hubli, Shirahatti Taluka, Gadag District, for establishing Sangli Gold mine in favour of Ramgad Minerals & Mining Ltd., Hospet, Vijaynagar District.

ಉಲ್ಲೇಖ:1) ಉಪ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ, ಪ್ರಾದೇಶಿಕ ವಿಭಾಗ, ಗದಗ ರವರ ಪತ್ರ ಸಂಖ್ಯೆ: ಎ4/ಜಿಎಫ್ಎಲ್/ಎಫ್ಸಿ/ಆರ್ಎಮ್ಎಲ್/ಮೈನಿಂಗ್/39.899 ಹೆ/ ಸಿಆರ್-09/2020-21. ದಿನಾಂಕ: 31-08-2024.

2) ಈ ಕಚೇರಿ ಪತ್ರ ಸಂಖ್ಯೆ: ಎ1/ಜಿಎಫ್ಎಲ್/ಬಿ/ಎಸ್.ಜಿ.ಎಮ್/ಜೆಲ್ಲಿಗೆರೆ/ಸಿಆರ್-01/2020-21/2022-23/143. ದಿನಾಂಕ: 02-05-2023.

ಮೇಲ್ಕಾಣಿಸಿದ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಉಲ್ಲೇಖಿತ ಪತ್ರದನ್ವಯ ಉಪ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ, ಪ್ರಾದೇಶಿಕ ವಿಭಾಗ, ಗದಗ ರವರ ವಿವರವಾದ ವರದಿಯನ್ನು ಸಲ್ಲಿಸಿರುತ್ತಾರೆ. ಕಪ್ಪತಗುಡ್ಡ ವನ್ಯಜೀವಿ ಅಭಯಾರಣ್ಯ ಅತ್ಯಂತ ಪ್ರಾಮುಖ್ಯವಾಗಿದ್ದು, ಬಯಲು ಸೀಮೆಯಲ್ಲಿರುವ ವೈಶಿಷ್ಟವಾದ ಅಭಯಾರಣ್ಯವಾಗಿರುತ್ತದೆ. ವನ್ಯಜೀವಿ ಸಂರಕ್ಷಣೆ ಹಿತದೃಷ್ಟಿಯಿಂದ ಸದರಿ ಪ್ರದೇಶದಲ್ಲಿ ಯಾವುದೇ ಗಣಿಗಾರಿಕೆಗೆ ಅವಕಾಶ ನೀಡುವುದು ಸಮಂಜಸವಾಗಿರುವುದಿಲ್ಲ.

ಸದರಿ ಅರ್ಜಿದಾರರು ಈಗಾಗಲೇ ಹಲವು ಬಾರಿ ಅರಣ್ಯ ಭೂಮಿಯ ಲೀಜಗಾಗಿ ಅರ್ಜಿಯನ್ನು ಸಲ್ಲಿಸಿದ್ದು, ಅವರ ಅರ್ಜಿಯನ್ನು ಪರಿಶೀಲಿಸಿ ಈಗಾಗಲೇ ಕಾನೂನು ರೀತಿ ಅದನ್ನು ತಿರಸ್ಕರಿಸಲಾಗಿರುತ್ತದೆ. ನಂತರ ಅರ್ಜಿದಾರರು ಕರ್ನಾಟಕ ಮಾನ್ಯ ಉಚ್ಚ ನ್ಯಾಯಾಲಯದಲ್ಲಿ ಕಪ್ಪತಗುಡ್ಡ ವನ್ಯಜೀವಿ ಅಭಯಾರಣ್ಯ ಘೋಷಿಸಿರುವ ಬಗ್ಗೆ ಸರ್ಕಾರದ ವಿರುದ್ಧ ಡಬ್ಲೂಪಿ ಸಂಖ್ಯೆ 24393/2021 ರಲ್ಲಿ ದಾವೆ ಹೂಡಿರುತ್ತಾರೆ.

ಉಪ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಗದಗ ಇವರು ತಮ್ಮ ವರದಿಯಲ್ಲಿ ವನ್ಯಜೀವಿ ಸಂರಕ್ಷಣೆ ಪ್ರಾಮುಖ್ಯತೆಗಾಗಿ ಹಲವಾರು ವರದಿಗಳನ್ನು ಸಲ್ಲಿಸಿರುತ್ತಾರೆ. ಮೇಲೆ ವಿವರಿಸಿದ ಎಲ್ಲಾ ಕಾರಣಗಳಿಂದ ಸದರಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ತಿರಸ್ಕರಿಸಲು ಸರ್ಕಾರಕ್ಕೆ ಶಿಫಾರಸ್ಸು ಮಾಡಬೇಕಾಗಿ ಕೋರುತ್ತೇನೆ ಹಾಗೂ ಇನ್ನುಮುಂದೆ ಸದರಿ ಅರ್ಜಿದಾರರ ಅರ್ಜಿಯನ್ನು ಸ್ವೀಕರಿಸುವ ಹಂತದಲ್ಲಿಯೇ ತಿರಸ್ಕರಿಸಬೇಕಾಗಿ ಕೋರುತ್ತಾ, ಉಪ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಗದಗ ಇವರ ವರದಿಯನ್ನು ಈ ಪತ್ರದೊಂದಿಗೆ ಲಗತ್ತಿಸಿ ಗೌರವಪೂರ್ವಕವಾಗಿ ಸಲ್ಲಿಸಿದೆ.

ತಮ್ಮ ವಿಶ್ವಾಸಿ,

ಮುಖ್ಯ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ,
ಧಾರವಾಡ ವೃತ್ತ, ಧಾರವಾಡ.

Karnataka Forest Department

Office of The Deputy Conservator of Forests, Gadag Division, Gadag - 582103

Phone No: 08372-200289 Email-dyconservatorgadag@gmail.com

A4/GFL/FC/RMML/Mining/39.899Ha./CR-09/2020-21 Date:31.08.2024

To,

The Chief Conservator of Forests,
Dharwad Circle
Dharwad

Sir,

Sub: Diversion of 39.90 Ha. (39.70 Ha. of Mining lease and 0.20 Ha. of Approach road) of forest land in Sy No. 45, 49 and 50 of Jalligeri village, KasabaHobli, Shirahatti Taluka, Gadag District for establishing Sangli Gold Mine in favour of Ramghad Minerals and Mining Ltd., Hosapet, Vijayanagara District.
Proposal No.FP/KA/MIN/42366/2019 dated 24.08.2020.

Ref:
1. GOK Letter No. FEE 41 FFM 2021(e) dated 12.07.2024.
2. The Principal Chief Conservator of Forests (FC) & Nodal Officer (FCA) Bengaluru, E-office File No. KFD/ HOFF/A5-1(MNG)/ 7/2019 - FC dated 08.08.2024.
3. Your Office letter no:A1/Bhoomi/CR-/2024-25 Date: 14.08.2024.
4. This Office letter No: A4/GFL/FC/RMML/Mining/39.899Ha./CR-09/2020-21 dated, 20.04.2023.

*****

This is with regards to your office letter as under Ref (3), wherein it was requested to examine in light of the new representation submitted by the User Agency i.e., Ramghad Minerals and Mining Ltd., Hosapet, Vijayanagara District and to submit the opinion to your good office.

On perusal of the earlier communications from this office, your kind attention is being drawn to this office letter No: A4/GFL/FC/RMML/Mining/39.899Ha. /CR-09/2020-21, dated, 20.04.2023 under reference (4) wherein the then Deputy Conservator of Forests, Gadag Division Smt. Dipika Bajpai had replied to the certain objections raised by the User Agency on the Reports filed by the DCF and CCF in their FC Proposal No. FP/KA/MIN/42366/2019. The objections raised were replied to as under:

1. The User Agency applied for Reconnaissance survey for which the Deputy Conservator of Forests, Gadag **(DCF)** granted permission. On perusal of the said permission letter by the DCF vide D3/GFL/MSC/CR/2001-02 dated 27.09.2001, it is clear that the permission was subject to various terms and conditions and in **Point No. 7** it has been explicitly mentioned that **'It is clarified that the permission for survey does not ipso-facto imply any commitment on part of the Karnataka Forest Department for forwarding the proposal to Central Govt. for diversion of forest land.'** The same was in accordance to the Condition No. 1.3 in the Handbook of Forest Conservation Act, 1980- Guidelines and Clarifications upto June 2004.

2. The petitioner was given PL vide CI.81.MM.2005 and CI.83.MM.2005 dated 20.02.2008 by the Government of Karnataka. Thereafter the petitioner applied for PL to the PCCF, Karnataka Forest Department. The Application was verified with regard to Para 1.3(i), (ii), (iii), (iv) and (v) of FCA, 1980 guidelines by the field officers and recommended for grant of PL to the petitioner.

   The Conservator of Forests, Dharwad Circle **(CF)** entered into an agreement vide Agreement No.1/2008-09 with the petitioner to allow for Prospecting for a period of 3 years upto 20.03.2012. The DCF was directed to allow the petitioner to begin prospecting work as per the agreement conditions.

   However, during inspection by the CF on 06.07.2010 and 07.07.2010, it was noticed that the petitioner had dug boreholes more than 4 inches diameter and trenches removing samples from the forest land in violation of the FC Circular No. F.No. 5-3/2007-FC dated 16.12.2008 which says the following:

   'Prospecting of any mineral, done under prospecting license granted under MMRD Act., which requires collection / removal of samples from the forest land, would be a stage between survey and investigation and grant of mining lease and as such, permission under FCA, 1980 would be required. However, in case of metallic ores – test drilling up to 20-25 boreholes of maximum 4" dia per 10 sq.km. and in case of coal and lignite (non-metallic ores) – (a) test drilling up to 15 boreholes of maximum 4' dia per 10 sq km for open cast mining and (b) test drilling upto 20 boreholes of maximum 4" dia per 10 sq.km. for underground mining for prospecting exploration or reconnaissance operations, without felling of trees, shall not attract the provisions of the Act. In all other cases involving more number of drilling of bore holes, prior permission of Central Government under the Act would be required." There is no mention of trenches in such permission. Hence the prospecting work was stopped by the DCF on 16.07.2010.

There is numerous correspondence between the petitioner, DCF, CCF and PCCF regarding permission to restart the work. In the meantime, the petitioner also filed a court case against Windmill company M/s. Bhoruka Power Corporation Ltd. for starting work for erecting wind mast in areas overlapping with the PL areas of the petitioner. The prospecting work which was stopped on 16.07.2010 wasn't permitted again.

3. The petitioner applied for forest clearance for diversion of 39.70 Ha. Of forest in Sy No. 45 and 50 of Jalligeri village of Shirahatti taluka in Gadag district in 2006. The application was processed and was being forwarded to the office of the APCCF(FC), Aranya Bhawan with incomplete documents each time from the Petitioner. The User Agency couldn't furnish details of non-forest land to be given in lieu of the diverted forest land. Meanwhile the **State Board for Wildlife in its meeting on 15.12.2012** decided to constitute the Kappathagudda reserve forest areas as 'Wildlife Sanctuary'. Pursuant to this decision the Sub Committee for State Board for Wildlife conducted public hearing on 21.02.2013 and 22.02.2013 and concluded in its meeting held on 15.03.2013 that Kappathgudda may be declared as Wildlife Sanctuary. Thereafter the PCCF (HOFF) sent his decisive report rejecting the proposal of the petitioner for diversion of the said area for gold mining vide A5(1) MNG.CR.5/10-11 dated 06.05.2013.

   Again, in the year 2017 the User Agency applied for forest clearance for diversion of the same area in Jalligeri village of Shirahatti taluka in Gadag district under FCA, 1980 despite the earlier rejection by the PCCF(HoFF). The then **DCF Mr.Yashpal Kshirsagar** submitted a detailed site inspection report which contained a list of medicinal plants, flora and fauna found in the Kappathgudda hills. Not just from the biodiversity point of view, even from ethno-botanical and cultural perspective, the ecosystem is unique, rare and endemic which deserves highest protection under the extant laws and rules and hence the project was rejected. The same was reiterated by the next **DCF Ms. Sonal Vrishni.** The status of the Kapatthgudda forests as the time of application of forest diversion by the petitioner was **'Conservation Reserve'**. However, in due course of time during the file movement, the same area was declared as '**Wildlife Sanctuary vide FEE 57 FWL 2019 dated 16.05.2019 by the State Government.** As the guidelines to apply for diversion of forest inside a protected area differed from that of a reserve forest, **the Petitioner withdrew the application for forest diversion vide letter dated 15.06.2019.**

   Again, in the year 2020 the petitioner applied for diversion of forest land in the same Sy nos. of Jalligeri village, Shirahatti taluka, Gadag district for gold mining vide **Proposal No. FP/KA/MIN/42366/2019.** The then DCF **Shri AV Suryasen** submitted site inspection report dated 04.12.2020 strongly rejecting the said

proposal. The same was reiterated and rejected by the CCF, Dharwad on 13.01.2021. Agreeing with the field officers, the **proposal was recommended for rejection by the PCCF(FC) and PCCF(HOFF) on 05.05.2021**

The Petitioner submitted its representation to the Additional Chief Secretary, Forest Ecology and Environment Department **(ACS, FEE)** against the observations and remarks made by the field officers to process the application for diversion of forest land for gold mining. The same was forwarded again to the PCCF (HoFF) by the office of the ACS, FEE for reply. Once againthe then DCF **Smt. Dipika Bajpai submitted a detailed project countering each point raised by the petitioner in its representation to the ACS and rejected the proposal.** The same has been accepted and forwarded by the senior officers to the Government.

However once again the petitioner has made representation vide letter dated June13, 2024 to the ACS, FEE, Govt. of Karnataka and the same has been forwarded to this office for comments. It can be seen that the petitioner is trying to influence officers by whatever means and re-directing the application for comments by the field officers when repeatedly they have recommended the proposal for rejection. This is being done repeatedly just to waste time of the officers in discharge of their official duty.

4. The Petitioner has also questioned the process of notification of the Wildlife Sanctuary and has alleged that the Sanctuary was declared despite widespread protests from the public which is not true. The facts are as follows:

4.1 In the **3rd meeting of the State Board for Wildlife held on 11.08.2010**, the proposal by PCCF (WL) to declare 300 sq.km. of Kappathgudda forest as Wildlife Sanctuary was discussed. A few members expressed concerns that development activities may get regulated after declaration of the said area as WLS. Hence it was decided to hold public consultation meetings by the Sub-committee headed by Shri Anil Kumble and the report of the same to be submitted in the next meeting.

This process of public consultations is not mandatory for declaration of Wildlife Sanctuary, however under Section 8 of the WLA 1972 which defines the Duties of Sate Board for Wildlife to advise the State Government: - (a) in the selection and management of areas to be declared as protected areas the SBWL advised the Chairman to conduct public consultations.

4.2 In the **4th meeting of the State Board for Wildlife held on 26.07.2011** the proceedings under 12-F was as follows: The declaration of KWLS in Gadag district was referred to Sub-committee headed by Shri Anil Kumble for

conducting public consultation. Despite making efforts, public meeting could not be conducted. Members unanimously felt that matter cannot be delayed any further as declaration of this sanctuary is of utmost importance in the interest of Conservation of biodiversity. **All members supported the declaration of Sanctuary and it is resolved to declare the sanctuary early.**

4.3 In the **5th meeting of the State Board for Wildlife held on 15.12.2012**, the members suggested that immediate action must be taken by the Sub-committee of the SBWL to conduct public consultation, and if after consultation the Sub-committee comes to the conclusion in favour of constituting the sanctuary, proposal should be sent to Government for issue of notification to declare 'Kappathagudda Wildlife Sanctuary' without waiting for Board's approval once again. PCCF (Wildlife) expressed that the concerned will be informed to take suitable action in this regard.

4.4 Subsequently **public consultation meeting was held on 21.02.2013 at Dambal under the chairmanship of Shri Anil Kumble** and august presence of Shri ManiranjanTondadaSiddalingaMahaswamigaluDambala and Shri Shivkumarswamygalu, Nandiverimatha, Doni. As can be seen from the proceedings of the meeting, both the Seers, as well college professors, environmentalists and wildlife lovers expressed strong support to the declaration of the reserve forest area as Wildlife Sanctuary. **What the petitioner claims as strong opposition is from the encroachers and unauthorised grazers who would have been liable to be prosecuted even when the forests were reserve forests. Hence objections from encroachers cannot be considered as tenable and acceptable.**

4.5 **The Sub-committee of State Board for Wildlife in its meeting held on 15.03.2013** expressed in these words: 'Regarding *the proposal for declaration of Kappathgudda Wildlife Santuary, Sri Anil Kumble stated that the sub-committee had taken up public consultation at Dambala village of Mundargi Taluka on 21.02.2012. He stated that the said meeting started in a cordial atmosphere and local political and religious leaders supported the cause of wildlife conservation and the declaration of KWLS. He further stated that later on when public were requested to share their views/opinion, some of the people who were present in the audience and appeared to have vested interests, spoke one after the other with a pre-determined mindset. Their stress was on the issues like encroachments, release of tiger and other animals by the Forest Department in the proposed area, instead of only putting forth their views, started arguing and did not allow other members of audience, who were supporting the cause of conservation, to express their views. Despite repeated requests from the leaders and officers to maintain decorum, they were seen to*

be very determined to disrupt the meeting itself. One person, who seemed to be under intoxication, reached the dais and joined 3-4 people in disrupting the public hearing. At this stage police and forest officials intervened and tried to restore order. However, nothing further could be heard in the din.

Sri Sanjay Gubbi added that some of these issues, raised by 3-4 people, appeared to be stage managed by vested interests who have scant respect for wildlife, ecology and environment. He further added that such behaviour of a few people deprived a large section of the audience (who wanted the conservation of this ecologically important landscape by declaring it wildlife sanctuary for the benefit of local people and addressing their livelihood issues, not only for the present generation but also for posterity) from being heard.

The Sub-Committee after detailed deliberations, and considering all the pros and cons holistically, came to be a conclusion that there was an urgent need for protection and conservation of the degraded habitat of Kappathgudda forest area. **PCCF(WL) also clarified that under WLPA, 1972 such hearing is not mandatory and the State Government is empowered in this Act to constitute the said forest area as a Sanctuary under the provision of Section 26-A of the WPA, 1972.**

The Sub-Committee concluded that it is most appropriate to declare the Kappathgudda forest area, which is a unique ecosystem of wildlife, and its habitat including the area medicinal plants and is better known as Western Ghats of North Karnataka as 'Kappathgudda Wildlife Sanctuary.

4.6 However, despite strong support and recommendation of the Sub-committee of the State Board for Wildlife for declaring the forest area as Wildlife Sanctuary, the **Government vide its letter dated 27.05.2014 communicated to the ACS (FEE) that the proposal have been dropped to declare the said area as Wildlife Sanctuary due to objections from people.**

4.7 Again in **7th meeting of the State Board for Wildlife held on 15.07.2014**, it was held that the proposal had earlier been recommended by the sub-committee of SBWL. The Addl. Chief Secretary, FEE Dept., expressed that there was lot of resistance to the said proposal and suggested that the matter will be taken up after the joint inspection of himself, PCCF (WL) and concerned officers. The members agreed'.

Hence it would be premature and foolish to conclude that the Government dropped the idea of declaring the said forest areas as Wildlife sanctuary altogether. In all the subsequent meetings of the State Board of Wildlife, the members unanimously

agreed that the area needed additional protection in the form of declaring it a Sanctuary.

5. In its proceedings **dated 09.04.2015 the Sub-committee of State Board of Wildlife** noted the following 'Regarding the declaration of the KWLS, matter was discussed and the Addl. Chief Secretary, FEE informed that the area was visited by him and PCCF (WL). Based on the field visits and interaction with public and feedback from local people **it was decided that proposed area of Wildlife Sanctuary maybe notified as Conservation Reserve that will ensure protection of the area.** It was resolved that same may be recommended to the State Board for Wildlife.

   It can be seen from the letter and spirit of proceedings that the Government was serious about according additional protection to the Kappathagudda forest area, however they were deliberating on the legal status of the protection.

6. Subsequent to the proceedings of the **8th Meeting of the State Board for Wildlife** held on 11.09.2015, the Government of Karnataka issued a notification vide FEE 291 FWL 2016 dated 19.12.2015 under Section 36A of the WLPA 1972 declaring an area of 17.872.48 hectares of reserve forest as **'Kappathgudda Conservation Reserve'.**

   Its mandatory on the part of the Government to conduct public consultations to declare any area as Conservation Reserve. Hence the notification was withdrawn due this legal error so that public consultations could be held.

7. It was observed in the **9th Meeting of the State Board for Wildlife held on 31.08.2016** under Agenda 15 which said 'Member Secretary submitted to the Board, that in the background of the resolution of the Board's 8th meeting held during September 2015, the Government notified Kappathagudda Reserve Forest as 'Kappathgudda Conservation Reserve' under Section 36-A of Wildlife (Protection) Act, 1972. During the months of May and June 2016, the Hon'ble Chief Minister (Chairman of the Board)/ Forest Minister (Vice chairman of the Board) received representations from the public / organisations of Gadag district submitting objection for having notified Kappathagudda reserve forest as the Conservation Reserve without going through the mandatory process / provisions like the holding of public hearing.....In the background of these details, the subject was placed for due deliberation and a decision.

8. The Board considered this issue in its entirety and resolved to withdraw the notification notifying Kappathagudda Conservation Reserve under Section 36A of WPA 1972. **However, it was resolved to hold public consultations / hearing afresh and outcome of this could be considered by the Board.**

9. Subsequent to the decision in the meeting of the SBWL, the notification No. FEE 291 FWL 2015 dated 19.12.2015 was withdrawn vide FEE 291 FWL 2015 dated 04.11.2016 so that fresh public consultations can be conducted.

10. The PCCF(WL) and Chief Wildlife Warden instructed the CCF, Dharwad Circle, Dharwad and DCF, Gadag (T) Division, Gadag to conduct public hearing immediately in Gadag involving Hon'ble member of the legislatures, all stakeholders, local public representatives, NGOs, interested public, Zilla/Taluk/Gram panchayats, head of the Thontadarya Mutt and other general public of the Gadag district vide his letter No. PCCF(WL)/D/CR-26/2010-11 dated 19.11.2016.

11. It would be complete manipulation of facts to say that none of the residents of the 33 villages part of the Kappathgudda forest areas were given a chance to view their opinions. Before the public hearing was held, **Gram panchayat meetings were held in all the 17 GPs and resolutions were passed in support of the declaration of the reserve forests as Kappathgudda Conservation Reserve.** All the villagers were represented by their elected representatives in these meetings at their respective villages. **The proceedings have been drawn both in English and Kannada language.** All the prominent dignitaries and both serving and former elected representatives of the district spoke eloquently at the public hearing. Counters were opened to receive written representations. Total representations on the Dias were 81 in nos. which were all in favour of the declaration. **Out of the 169 representations received at the counter, 136 were in favour of the representation and 32 were against. Out of the 32 negative representations majority were connected to mining companies and Ramgad Mineral & Mining Ltd. Others were from Thanda (Lambani settlements) which are encroachments in the fringe of forest areas, which would continue to be encroachments even in the absence of declaration of the area either as Conservation Reserve or Wildlife Sanctuary.** 66 applications with discrepancies like photocopies with single signature or no signature, no mention of the village name etc. were received which could not be taken into consideration. All those who spoke on dais were video recorded and a copy of the same is produced.

The Petitioner's representation was received at the counter hence it would be wrong on its part to level baseless allegations on the respondent.

12. An area of 17,872.248 hectares of reserve forest in Gadag, Mundaragi and Shirahatti talukas was declared as 'Kappathagudda Conservation Reserve' vide FEE 291 FWL 2015 dated 11.04.2017 by the Government of Karnataka after following due procedures as mandated under Section 36A of the Wildlife Protection Act.

13. In the **11th meeting of the State Board for Wildlife held on 09.01.2019**, the following was deliberated: The Board was informed about re-notifying 178.66 sq.kms. of Kappathagudda reserve forests as 'Kappathagudda Conservation Reserve' as per Section 36 A of WLA 1972. The Board further deliberated on the issue and many of the members expressed that the status of the land at Kappathgudda being a reserve forest is not appropriate to constitute the reserve forests as a Conservation Reserve. The Board during the 3rd meeting held on 11.08.2010 had proposed for declaring the entire 300 sq.kms. of Kappathagudda reserve forests as Kappathagudda Wildlife Sanctuary.

    Kappathagudda reserve forests is unique as the vegetation in the area has many medicinal plants and it is worth preserving the same for eternity. All the members unanimously suggested to declare the entire 300 sq. kms of Kappathagudda reserve forest as Kappathagudda Wildlife Sanctuary. The board resolved in favour of proposal to declare entire 300 sq. kms area of Kappathagudda RF as Wildlife Sanctuary. Detailed proposals with draft notification had to be submitted to the Govt. for declaring the forests of Kappathagudda as Wildlife Sanctuary, under Sec-26 A of WLA, 1972

14. ***The Government of Karnataka declared the Kappathgudda forests as 'Kappathagudda Wildlife Sanctuary' vide FEE 57 FWL 2019 dated 16.05.2019.***

    Apropos the submissions of the UA under 'RMML submissions for supporting granting of the Forest Clearance' in Page No. 4 of 12.

15. It is true that several gold mines existed in the Kappathgudda forests in yester year. The gold fields were active from 1901 to 1911 involving nearly 50 odd companies up to the world war. Hutti Gold Mining Company abandoned the mines in 1994 due to high carbon and sulphur content in the ore and the excavation become uneconomical. Low Fe-grade iron ore was mined in the Doni forest area but from 1999-2000 onwards none of the leases have been renewed.

    The complete area was abandoned without proper mining closure and hence it was highly erosive. However, the area is now under green growth and showing signs of ecological succession. Wild animals have begun to be sighted in the earlier mined areas and hence the forests are recuperating.

    The abandoned tunnels which were used for gold mining, have now become hide-outs and breeding places for animals which use sub-terranean ecosystems like caves, limestone karst areas and found only in such habitats. Different species of bats, insects, reptiles, rusty spotted cats etc. have been found in these tunnels.

Earlier a team of scientists from SACON, Coimbatore Dr. Goldin Quadros and Dr. Shirish Manchi who is an expert on sub-terrancan ecosystems visited these tunnels and found many deep aquifers and wells which are now critical for ground water recharge. Any damage caused to these structures will affect the surface water table enormously. The report is attached for your kind perusal.

16. **The Hon'ble Supreme Court of India in its order dated 04.08.2006 in I.A. 1000 in W.P. 202/95** T.N. Godavarman Thirumulpad Vs. Union of India and Ors. has clearly mandated that no proposal for mining in a sanctuary / National Park or within one km from the boundary of a sanctuary/National Park should be forwarded to the Ministry for consideration of the Standing Committee for National Board for Wildlife.

    The Hon'ble Supreme Court of India in its order dated 03.06.2022 in I.A. 1000 in W.P. 202/95 T.N. Godavarman Thirumulpad Vs. Union of India and Ors mentions under point no. 44(d) – Mining within the national parks and wildlife sanctuaries shall not be permitted.

17. Kappathagudda is rich in endemic and rare medicinal plants, fauna like Indian Grey wolves, Indian foxes, golden jackal, striped hyena, leopards, four horned antelope, chinkara, civets, blackbucks, spotted deer, a wide range of reptiles ideal for this habitat and other small mammals. A list of faunal and floral composition is attached. There have been continuous direct and indirect sightings of these animals by our field staff on patrolling duty as well as images captured by the cameral traps being installed randomly in forest areas.

18. There has been a study going on in KappathaguddaWildlife Sanctuary in association with the **Wildlife Institute of India, "The Study on the status, habitat and conservation of Indian Grey wolf and associated carnivores at Kappathagudda Wildlife Sanctuary and other forest in Gadag Division."** The Institute has submitted its preliminary report based on the yearlong survey with the forest officials and team of Wildlife Institute of India. As per the preliminary report of Wildlife Institute of India, the Kappathagudda Wildlife Sanctuary is home to the following with species.(Extracts from the report attached)

    1. Leopard (Panthera pardus fusca)
    2. Jungle cat (Felis chaus)
    3. Stripped hyena (Hyaena hyaena)
    4. Indian grey wolf (Canis lupus pallipes)
    5. Golden jackal (Canis aureus)
    6. Bengal fox (Vulpes bengalensis)
    7. Blackbuck (Antilope cervicapra)

8. Four horned antelope (Tetracerus quadricornis)
9. Rusty- spotted cat (Prionailurusrubiginosus)
10. Asian palm civet (Paradoxurushermaphroditus)
11. Small Indian civet (Viverricula indica)
12. Indian crested porcupine (Hystrix indica)
13. Black napedhare(Lepusnigricollis)
14. Bonnet macaque (Macaca radiata)
15. Chinkara (Gazella bennettii)
16. Jackal (Canis aureus indicus)
17. Grey Langur (Semnopithecus)
18. Indian grey mongoose (Urvaedwardsii)
19. Spotted Deer (Axis axis)
20. Wild Pig (Sus scrofa)

19. A few publications are worth reading here which speak about the environmental damages by open cast gold mining.

i. ***The Indian Minerals Yearbook 2020(Part II- Metals and Alloys) 59th Edition on GOLD published by the Indian Bureau of Mines lays down the following:***

At page no. 8-9 under the title Environmental Concerns this is said in the report:

"Gold is recovered from ores by two main methods, both of which affect environment. Earlier for recovery of gold, amalgamation processes were used in which ore was mixed with mercury that selectively dissolved gold which was then recovered by evaporation. Mercury from these operations was never recovered and remained as pollutant in many old mining areas. The cyanide process is based on the property of precious metals in forming soluble complex ions with cyanide anion. Cyanide does not dissolve quartz, iron oxides and other common gangue minerals and yields a relatively simple gold-bearing solution known as pregnant solution. In some gold mines, gold is dissolved from the ore by crushing and grinding followed by mixing with cyanide solution in large vats.

Cynaide is highly toxic compound and requires special handling. During ore treatment, pH of cyanide solution must be kept at about 11 to prevent cyanide from reacting with hydrogen ion to produce HCN, a deadly gas. Although less toxic substitutes of cyanide are known, it is not yet clear whether such substances will be cost effective or environment-friendly."

ii. ***Gold Mining is one of the world's most destructive and unnecessary industries – here's how to end it by Stephen Lezak, Research Manager at the Smith School of Enterprise and the Evironment, University of Oxford Published on Feb 14, 2023 by 'The Conversation'.***

In the background of all the submissions, observations and rebuttal to the UA's letter, it is once again reiterated that the forests of Kappathgudda Wildlife Sanctuary are recouping and rejuvenating under the protection status as a 'Sanctuary'. The wildlife sightings, endemic flora, medicinal plants all have found a safe refuge in this area and it is our prime duty to protect these inter-generational assets to the best of our abilities. Only around 6% of the total land area in Gadag district is forest land out of which several swathes is under encroachment which are to be evicted after a decision is taken for the rejected FRA applications. The rest require high protection and preservation. Forests of Kappathgudda are source of ground water, clean air and endemic flora and fauna and they need to be preserved in their entirety for several generations to come.

Hence, the light of the above-mentioned facts, status and reports the user agency should not be allowed to undertake any kind of mining operation in the Kappathagudda Wildlife Sanctuary. This is submitted to your kind office for consideration and necessary action.

Yours faithfully,

Sd/-
Deputy Conservator of Forests
Gadag Division, Gadag.

Copy submitted to the Principal Chief Conservator of Forests (Forest Conservation), and Nodal Officer (FCA), Bangaluru for kind information.

Deputy Conservator of Forests
Gadag Division, Gadag

Brief Report

Short visit to the abandoned Gold Mines in the Kappatagudda Wildlife Sanctuary, Gadag, on 29th March 2023

Team

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Mrs. Dipika Bajpai, Deputy Conservator of Forests, Gadag

Ms. Suma Haleholi, Range Forest officer, Shirahatti

Mr. Mahesh. Marennavar, Range Forest officer, ICT Gadag

Mr. Prakash Ganiger, Forest Guard, Kundralli Beat

Mr. Suresh Lamani, Forest Guard, Jalligeri Beat

Mr. Amaresh Lamani, Forest Guard, Majjur Beat

Mr. Ameensaab Balutagi, Forest Guard, Gadag

Mr. Iranagouda Patil , Watcher, Gadag

Caves are the world's most remote and fragile wildernesses (Jones, 2009). Caves, by definition, are natural underground voids (White and Culver 2019), and passable caves (that are accessible to humans) are just fragments of the hydrogeological network. Caves exist in various geological materials, but they share many common characteristics concerning environmental factors: total darkness, relatively constant temperature and humidity and a compartmental geometry over a wide range of dimensions. Caves are formed in different rock types and processes, although the largest and most common caves are formed in limestone, dolomite, and solidified lava (Moldovan et al. 2018). These are karst caves formed by the chemical dissolution of the host rock. These are so-called "true" karst caves. Other "pseudokarst" caves are lava tubes and various fissure and talus caves formed in rocks that do not dissolve fast enough in the water to make them "karstic". They are thus formed by processes other than chemical dissolution alone. Caves may connect into vast, interconnected systems of complex architecture but can also consist of physically isolated units, like islands, and can host endemic biota.

Cave ecosystems are usually characterised by the absence of natural light, stable temperature, geophysical structure, high relative humidity, and poor and sporadic food sources (Biswas, 2010; Bernabò et al., 2011). Nevertheless, because the environment is discrete, rigorous, and easily defined, accessible cave habitats provide exemplary systems for conducting biological studies (Culver 1982; Howarth 1993). Hence, they are commonly called natural laboratories.

Caves are usually inaccessible, with several physical and psychological barriers aggravated by the lack of light (Kambesis, 2007). Despite these characteristics, they harbour various unique and sensitive organisms, many of which are cave obligate (Martin et al., 2003). Caves are natural subterranean voids that are large enough for humans to enter. They are formed mainly due to volcanic eruption, erosion, or melting of water beneath or within the glaciers and water or air-filled water.

Subterranean habitats support discrete ecosystems composed of communities that often include species highly specialised to live underground. The cave's physical, geological, and environmental settings rigidly constrain the physical environment. Therefore, it can often be defined with great precision. Unfortunately, these enclosed habitats represent rigorous, high-stress environments for most surface organisms and are difficult for humans to access and study (Moldovan et al., 2018).

Caves form a complex network of habitats with cracks, crevices, branches, and nodes of various sizes, most inaccessible to humans (Campbell et al., 2007). Along with the permanently resident organisms, temporary visitors also use different cave microhabitats that are resulted from variations in cave morphometry, light intensity, temperature, and humidity. Five habitat zones of the terrestrial subterranean habitats are strongly defined based on the physical environment, especially the light intensity, moisture, airflow, gas concentration (mainly CO2), and evaporative power of the air. The five cave zones are; Entrance, Twilight, Transition, Deep, and Stagnant-air zones (Howarth, 1993). However, conventionally a cave, based on the intensity of light in the region, is divided into three different zones viz., Entrance, Twilight, and Dark zone (Culver and Pipan, 2019; Manenti et al., 2015; Biswas, 2010).

The entrance zone (EZ) or euphotic zone is the cave opening and immediate area with sufficient light for vascular plant life to grow. Therefore, it supports the highest number of species as the epigean and hypogean (endogean) flora and fauna occur here. The twilight zone (TZ) or disphotic zone is the region with reduced/dim light and is not influenced directly by external factors. Species diversity is low and mostly composed of waifs from neighbouring zones,

surface animals seeking shelter, scavengers, and predators. Beyond the twilight zone is total darkness where obligatory cave animals occur. Microclimatic conditions in the dark zone (DZ) or aphotic zone are more or less constant but periodically stagnate, and gas concentrations, particularly carbon dioxide, become stressful (Howarth, 1993).

While considering caves as living spaces, the size of the cave is often less important as most cave organisms are a few millimetres or even less in size. They can colonise any void of larger size than this, especially where there is an absence of light and environmental conditions are relatively constant throughout the year. These places are generally occupied by typical troglobionts or stygobionts, which live permanently in caves. The cave-dwelling organisms are categorised as troglobites, troglophiles, or trogloxenes based on their ecological and evolutionary relationships with caves (Racovitza, 1907; Sket, 2008). Troglobites are the obligatory cave organisms that spend their entire life in caves. Many troglobionts may be particularly sensitive to small fluctuations in abiotic variables such as temperature, humidity, dissolved oxygen, and concentrations of heavy metals, among others. Troglophiles depend on caves for parts of their life but must exit the cave for critical biological functions. Trogloxenes are temporary visitors to caves (Romero, 2009; Moldovan et al., 2018). These organisms using various micro-habitats inside the cave is a mechanism that makes possible the coexistence of species with similar environmental requirements and using the same resources (defined as niches), especially in caves where living conditions and resources are patchily dispersed (Moldovan et al., 2018). According to the physiological requirements and microclimatic suitability, various species occupy different cave zones.

Furthermore, seasonal changes in the microclimate inside caves result in distributional variations in the fauna (Lunghi et al., 2017). The heterogeneous microclimate in the entrance and twilight zones attract abundant troglophiles and trogloxenes. As Lunghi et al. (2014) explained, these organisms form a significant portion of the caves' biomass as an essential part of ecosystem functioning. Moreover, while moving in and out of the caves, these facultative animals transfer resources from the epigean to the hypogean environment, forming a crucial energy source for the subterranean ecosystems (Culver and Pipan, 2009).

Obligate cave/subterranean fauna, and many facultative cave/subterranean species (such as bats), rely heavily on subterranean habitats. Thus are highly vulnerable to threats that result in environmental change, habitat disturbance, and degradation. These threats vary as per scope, source, severity, and timing among species, karst regions, and continents. However, some

threats, such as climate change and groundwater pollution, are global (Culver and Pipan, 2009). Many caves are attractive as ecotourism destinations and provide unique opportunities to educate the public about unexpected biodiversity values and ecosystem services. The ecosystem services provided by caves include supporting services, i.e., providing habitat to species such as bats, insects, and various micro-flora/fauna and supporting a wide array of biodiversity. Caves are also known to provide cultural services (recreation, educational, aesthetic) and provisioning services (water availability, groundwater recharge) (Medellin et al. 2017).

Cave science or Biospeleology is still in its infant stage in India. The cave fauna of many countries is well studied and understood up to a significant level. However, India does have meagre information about its cave fauna. Except for a few random cave faunal explorations, collections, and descriptions, a detailed survey of cave fauna is not conducted across the country. Other than the documentation of cave fauna from a few caves in the states of Meghalaya, Chhattisgarh, Andhra Pradesh, and the Andaman Islands, we do not have systematic cave-faunal studies steered in India. We need systematic cave floral and faunal studies, including the systematic data collection about species population, distribution and microhabitat, to suggest/recommend conservation strategies to conserve/preserve these vulnerable habitats and species.

Cross-habitat spillover may be the outcome of a process of habitat loss or degradation where the receiving habitat serves as a refuge for organisms. Once surface habitats are lost or degraded, animals can find underground refuge in subterranean habitats, such as caves. The subterranean habitats also include abandoned mines, recognised as human-made subterranean habitats. Because of limited or no interference, the abandoned mines provide unique cavelike habitats to various animals that may later evolve as troglofauna. Caves can work as refuges for the fauna in landscapes where the native vegetation cover surrounding them was degraded. Therefore, habitat degradation on the surface should be a key variable when characterising cave ecosystems for conservation prioritisation and offset planning. Habitat degradation causing a cross-habitat spillover effect highlights the importance of maintaining the connection between subterranean habitats by the surface, especially large caves and other subterranean habitats.

Recently, based on the request from the Deputy Conservator of Forests (DCF), Gadag, scientists from the Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore visited Gadag for providing technical consultation on environmental matters.

During this visit the SACON team and the Karnataka Forest Department (KFD) staff of Gadag Division, including DCF, Gadag visited the Pre-British time Gold Mines inside the Kappatagudda Wildlife Sanctuary, Gadag Forest Division, Gadag on 29-03-2023. Gold extraction and other related activities in these old mines were arrested during the early 1990s. After that, these abandoned mines were never visited for any purpose. However, it created curiosity about these subterranean human-made structures as habitats and flora and fauna using it. Therefore, to explore the conditions inside these mines, a quick visit was undertaken by the SACON scientists and KFD staff. The caves were visited for a cursory brief survey to get an idea about the various fauna using the unique habitat provided by the abandoned mines in the region. We explored three abandoned mines, ecologically recognised as human-made subterranean habitats.

Man-made Subterranean Habitat / Abandoned Mine – 1

(Location; near Mahalingeshwara Temple – 142 sy no of Soratur and 45 sy no of Jalligeri forest at the border of Gadag and Shirahatti range)

This Abandoned Mine had approximate opening dimensions of 3 to 4 meters wide and similar height. As with other Mines, this also had similar dimensions at the opening and inside. Although, according to the locals, this Mine extends long with several branching tunnels, we could access only up to around 40-45 meters straight tunnel as the other branches in the lower strata were filled with water. Also, the tunnel had a bunch of clastic sediments (fallen rocks and boulders) blocking the way. During the visit, we could encounter various fauna in this subterranean habitat (Table 1). The most significant finding was that this particular abandoned Mine might be one of the most significant groundwater resources, recharged by the rains and also playing a vital role as a groundwater source for the vegetation standing on the surface and combating climate change. Also, it might hold a significant amount of stygibitic fauna, some of which may not be known to us and are potentially new to science.

Man-made Subterranean Habitat / Abandoned Mine – 2

(Location: 45 Sy no of Jalligeri Forest)

This Abandoned Mine had approximate dimensions of 3 to 4 meters wide and the similar height. Unfortunately, though the Mine is extended with several branching tunnels, we accessed two tunnels one was up to around 40 meters straight tunnel and an additional branch of around 85 meters, which was further branched to extend several meters (surely > 25 meters). The main tunnel of approximately 40 meters ended with a long cliff and a sinkhole of around 2 feet diameter at 10-12 meters in height. Also, at the same place, the verticle trench of around 15 meters was located, which was further filled with crystal-clear groundwater. Part of the trench on its way down was partly filled with clastic sediments (fallen rocks).

The 85-meter-long tunnel was horizontal and accessible with some wet ground and shallow water ditches. These ditches supported the amphibian fauna and several micro and meio-fauna that could not be seen with the naked eye. The water on the floor was supported with the organic matter from the Bat (Chiroptera) species hanging on the roof and dropping their guano. We also encountered other fauna in this subterranean habitat (Table 1). One of the significant findings was the usage of this habitat by the Rusty-spotted Cat (*Prionailurus rubiginosus*). We recorded the pug marks and a dead individual of the species. As the species is included in the Schedule-I of the Wildlife Protection (Act), 1972, the Karnataka Forest Department Staff collected the dead individual for the further official process. After 80-85 meters in length, the tunnel branch had a sinkhole of approximately 1.5 meters in diameter at 6-7 meters in height. Just close to the bellow sinkhole, the dead Rusty-spotted Cat was encountered. As we witnessed pugmarks of the species while exploring the place, we were sure that the individual was not accidentally inside the cave. Also since the individual was found dead without any external injuries, we speculated that it neither fell through the sinkhole. Later the postmortem report confirmed that the individual died because of an infection in the gastro intestine. A dead, half-digested cave-dwelling bat was found in the Rusty-spotted cat's gut. With deeper ditches, the tunnel continued for several meters (> 25 meters), which we could not survey because of a lack of caving gears and limited time. However, we believe that the further spaces have groundwater, which might serve as a unique subterranean wetland habitat for several aquatic fauna to be discovered and documented.

Man-made Subterranean Habitat / Abandoned Mine – 3

(Location: Sy No 55 of Kablayatkatti Forest , Gadag Range)

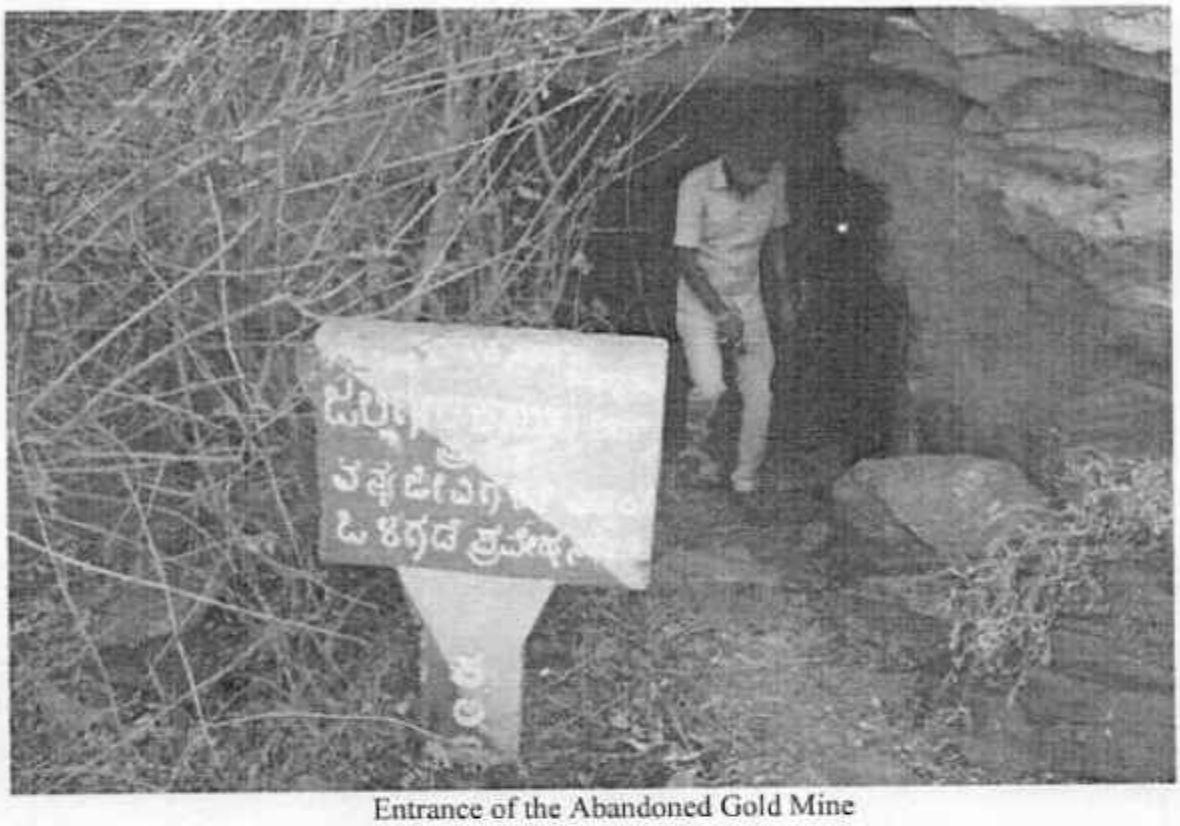
This Abandoned Mine had approximate dimensions of around 4 meters wide and similar height. The cave was halfway closed from the ground up to a meter high, using the boulders, leaving less than half a meter high and a wide opening close to the ground. On inquiry, it was understood that the wall was made to avoid the entry of big mammals inside. We could access the way inside the Mine by jumping over the boulders. The tunnel was going horizontal and approximately after 8 to 9 meters, a sinkhole of more than 2 meters in diameter was 4-5 meters in height was present. At the opening of the sinkhole, around 2 feet bee long hive of the Rock Bees (Apus sp.) was located above the clastic sediments (fallen rocks and boulders) on the floor. After another 7 to 8 meters the Avon (deep depression in the roof) was observed with the sedimentary rock on one side. This Avon was around 2 to 3 meters deep and used by a group of around 8 individuals of the False Vampire Bats (*Megaderma Lyra*). Surprisingly, below the colony of these carnivore bats known to feed on other small bats and rodents, we encountered individuals of 2 different rodent species of various sizes. Then at the tunnel's last stop, the clastic sediment blocked the way ahead so we could not explore further. The Horse-shoe bats (*Rhinolophus sp.*) were moving all across the tunnel. We also encountered various other animals throughout the exploration here (Table 1). The significant observation in this particular human-made subterranean habitat was that the place inside was comparatively humid. Also, the diversity was comparatively more than that the other sites.

This short visit allowed us to understand that these abandoned mines, since inactive for a significant time, provide a unique subterranean habitat to various animals. However, we could not survey the aquatic fauna because of the limited time and resources. Other than the animals we encountered, the area is known to have animals [Leopard (*Panthera pardus*); Jungle Cat (*Felis chaus*); Golden Jackal (*Canis aureus*); Indian Grey Wolf (*Canis lupus*); Striped Hyena (*Hyaena hyaena*); Common Palm Civet (*Paradoxurus hermaphroditus*); Small Indian Civet (*Viverricula indica*); Indian Grey Mongoose (*Herpestes edwardsii*); Ruddy Mongoose (*Herpestes smithii*)] capable of using these habitats. Which further enhances the significance of these habitats. Furthermore, these Abandoned Mines' vital role in storing the groundwater for the ecosystem functioning can not be denied.

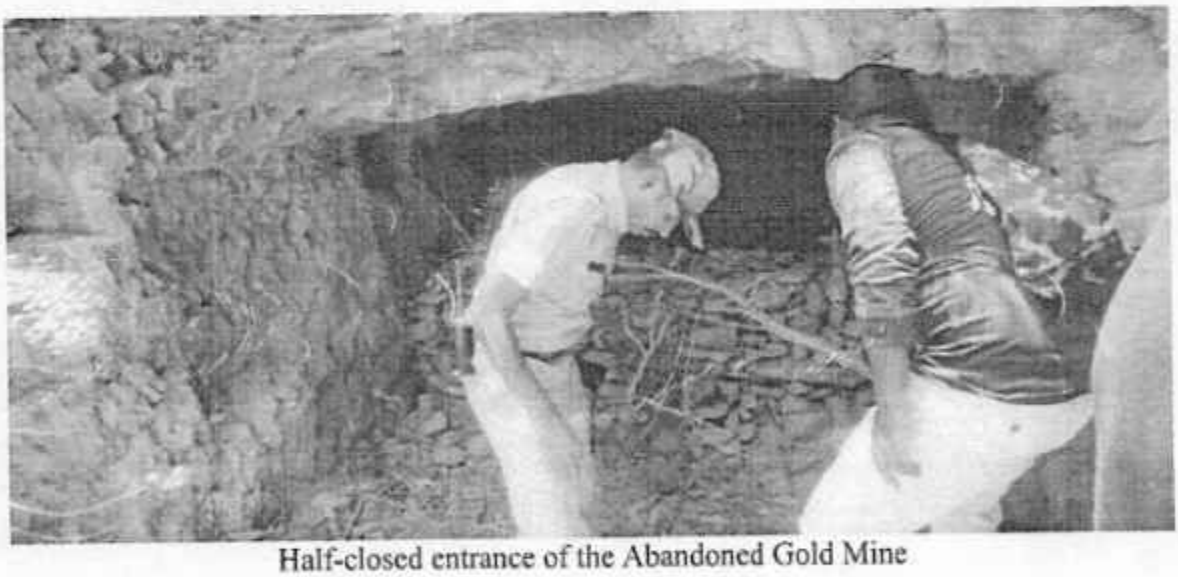
Based on the short visit to these Abandoned Mines, we understand these human-made subterranean habitats should be protected from further disturbance/damage, and a detailed study should be conducted to learn more about their conservation value and ecosystem services.

Table 1. Animals encountered in the various Abandoned Mines visited on 29th March 2023.

Sr. No.	Animal encountered		Sites		
	Common Name	Scientific Name	Abandoned Mine 1	Abandoned Mine 2	Abandoned Mine 3
	Rusty-spotted Cat	*Prionailurus rubiginosus*		+	
	Indian boar	*Sus scrofa*			+
	Indian crested porcupine	*Hystrix indica*		+	+
	Lesser False Vampire Bat	*Megaderma spasma*			+
	Horseshoe Bat	*Rhinolophus spp.*	+	+	
	Leaf-nosed Bat	*Hipposiderous spp.*	+	+	+
	Mouse-tailed Bat	*Rhynopoma spp.*		+	
	Common Indian Tree Frog	*Polypedates maculatus*		+	
	Toads	*Bufo spp.*		+	
	Frogs (2 types)	*Unidentified spp.*		+	
	Spiders (3-4 types)	Arachnedae *spp.*	+	+	+
	Moths (4 types)	Lepidoptera *spp.*	+	+	+
	Crickets (2 types)	Orthoptera *spp.*	+	+	+
	Cochroach (2 types)	Blathodae *spp.*			

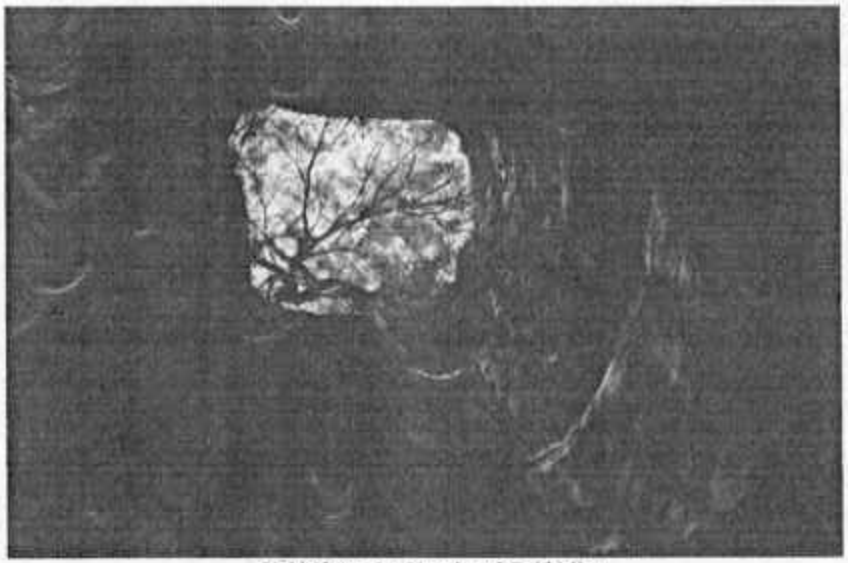


Entrance of the Abandoned Gold Mine

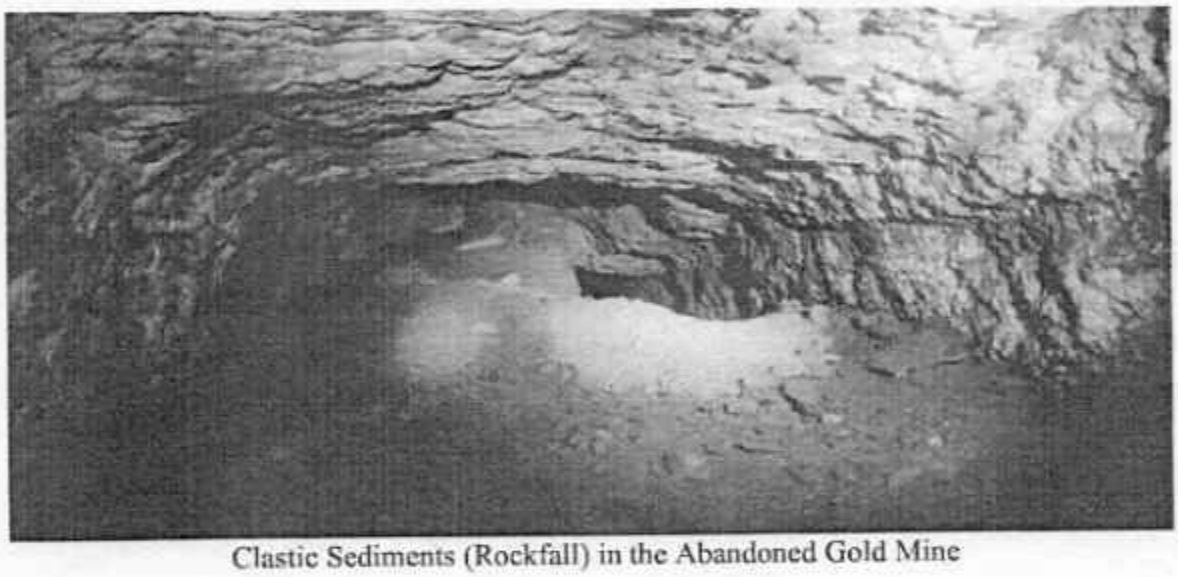


Half-closed entrance of the Abandoned Gold Mine

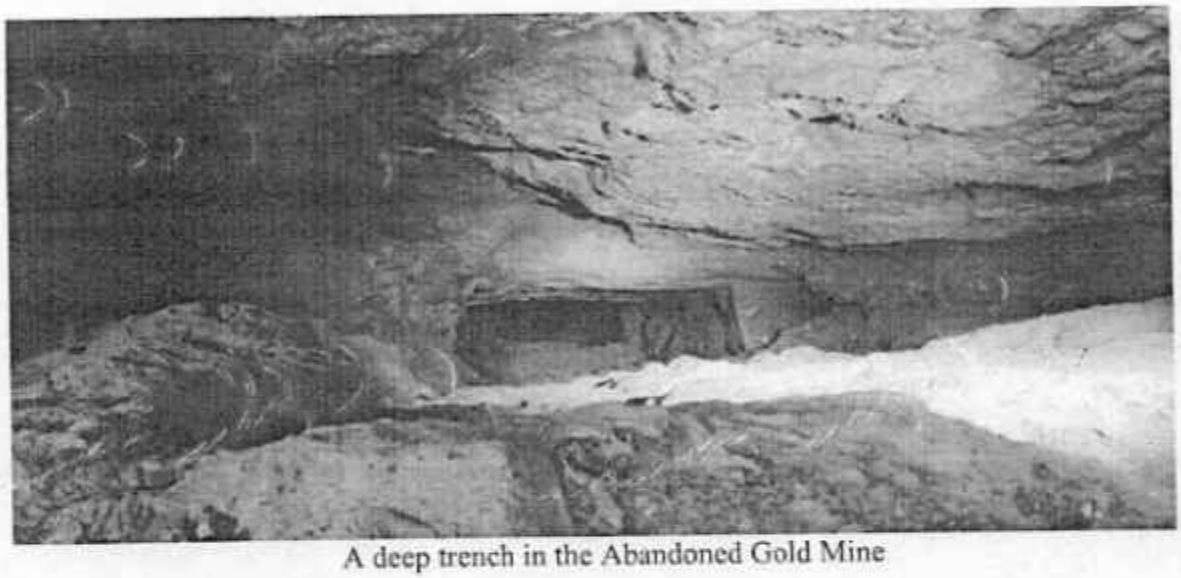
Exploring the Abandoned Gold Mine



Sinkhole on the Abandoned Gold Mine



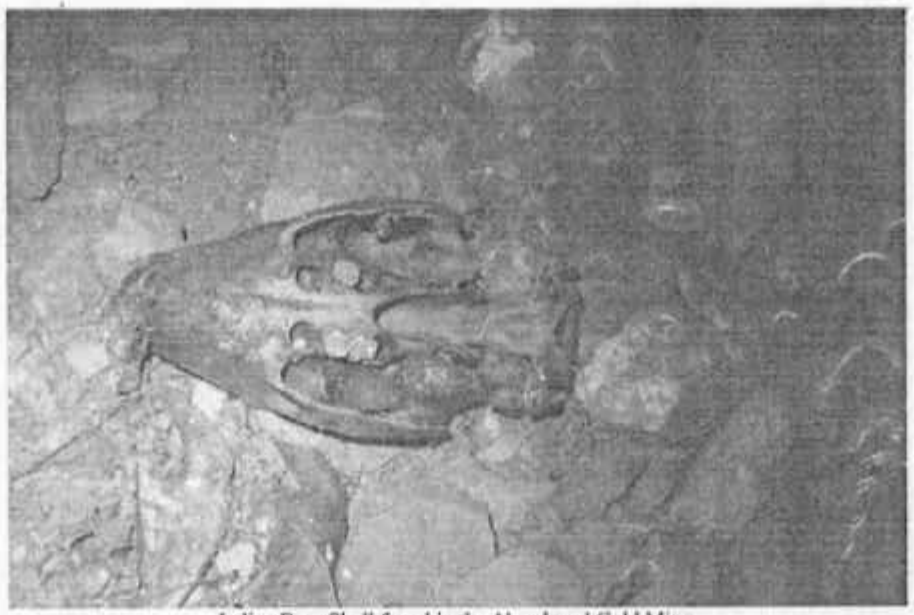
Clastic Sediments (Rockfall) in the Abandoned Gold Mine



A deep trench in the Abandoned Gold Mine

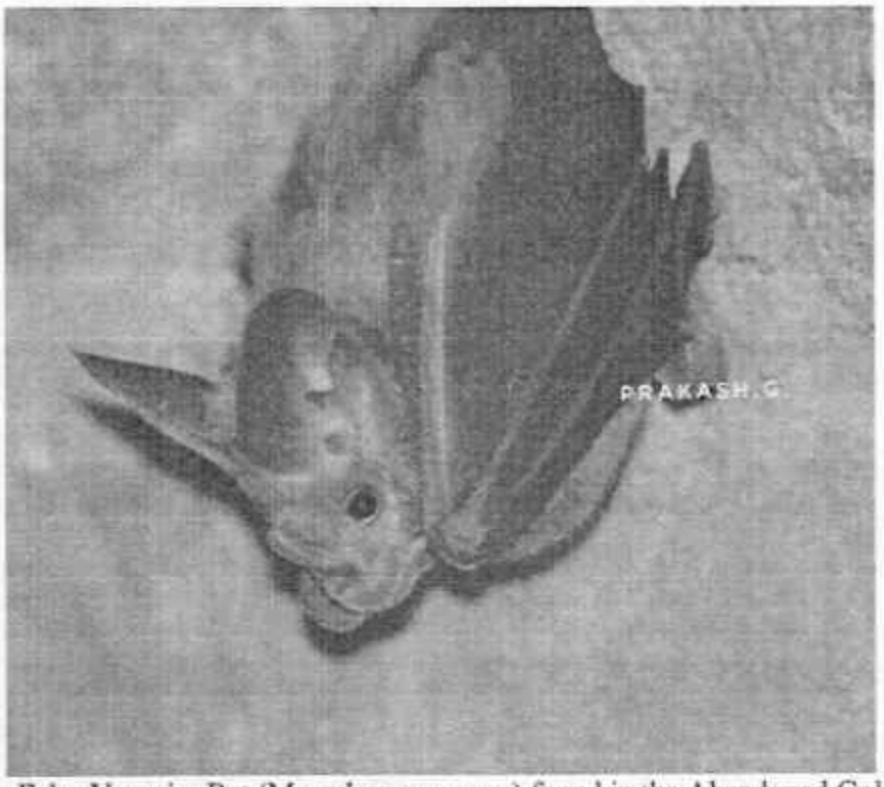
Lower portions of the Abandoned Gold Mine act as spaces for the groundwater storage

Dead individual of the Rusty-spotted cat found in the Abandoned Gold Mine

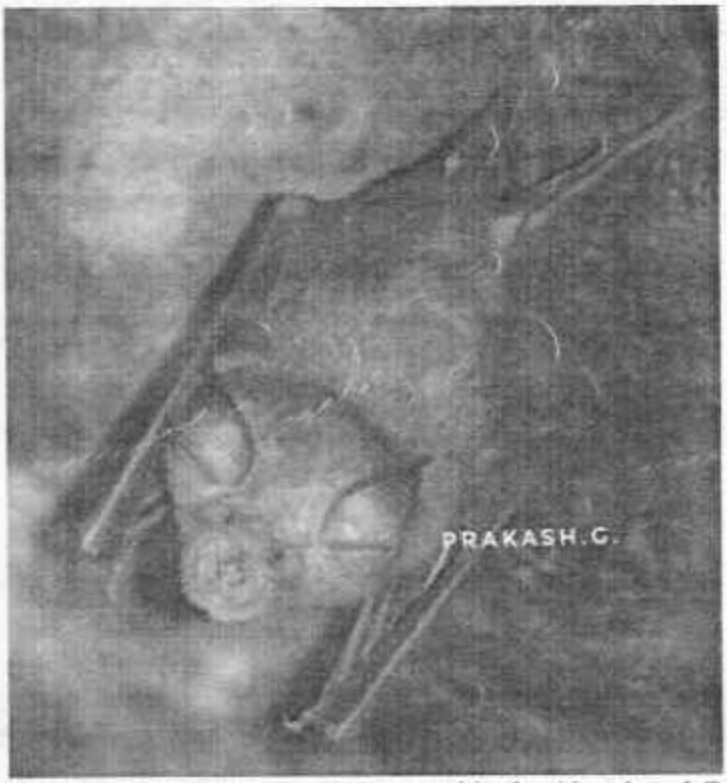


Indian Boar Skull found in the Abandoned Gold Mine

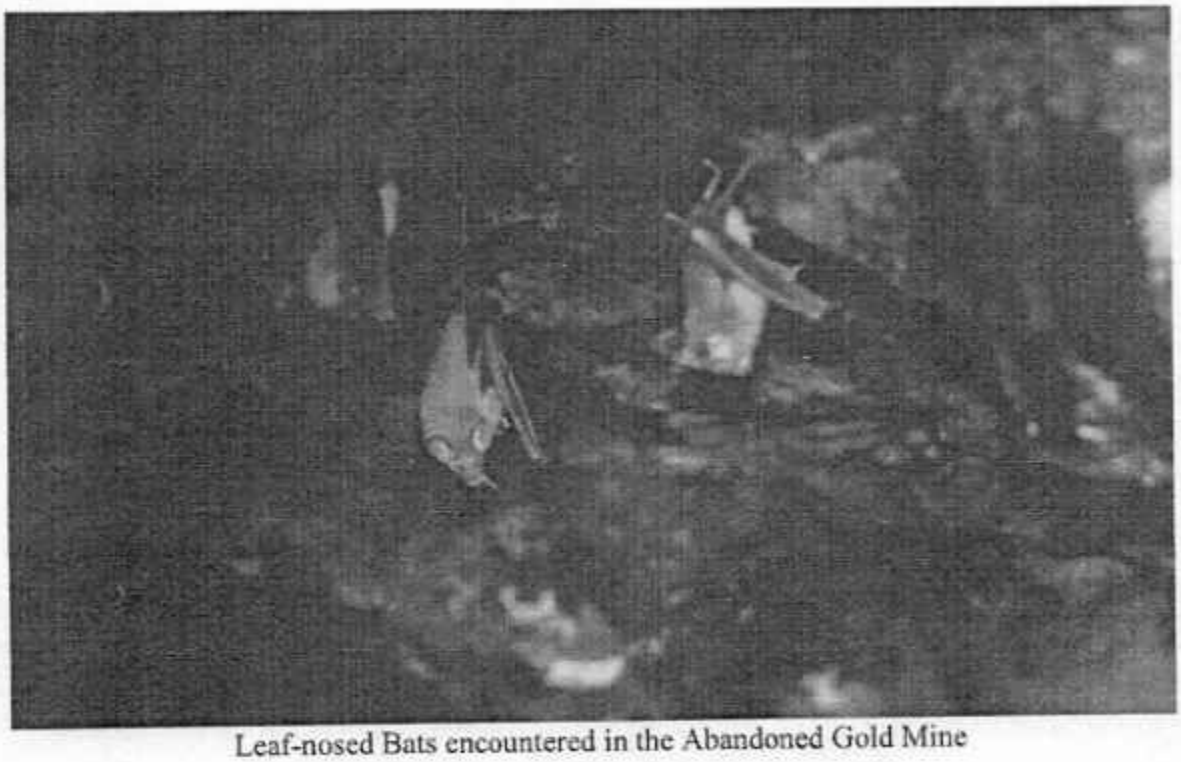
Pallets of the Porcupine spp. in the Abandoned Gold Mine



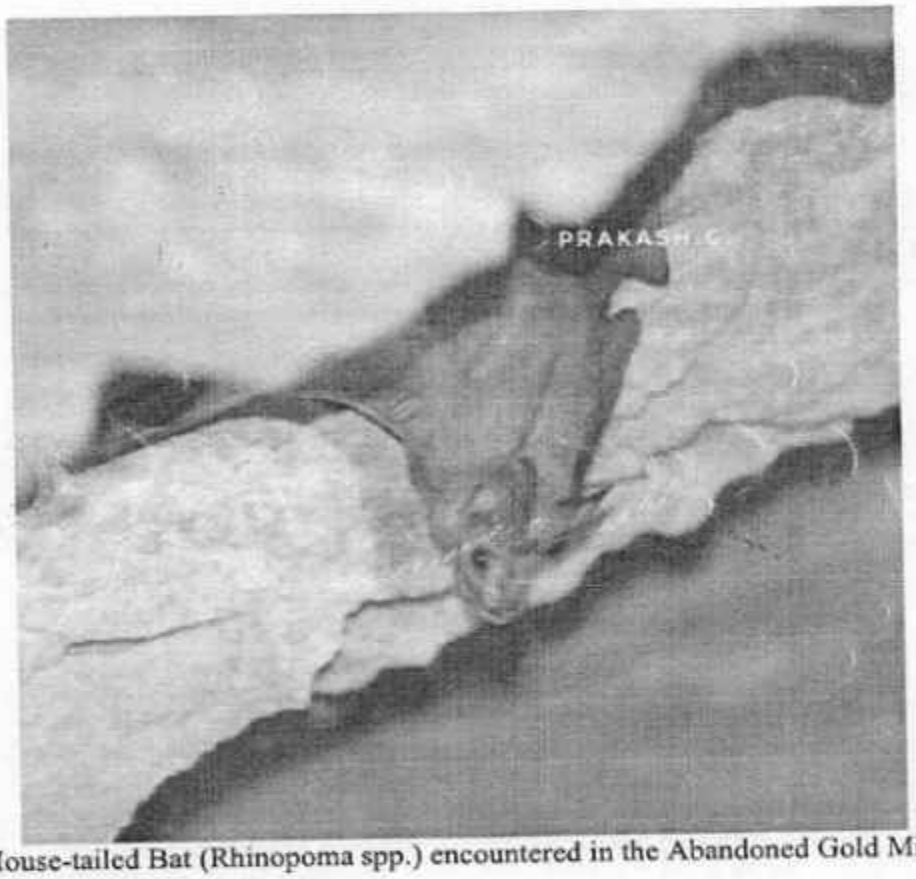
Lesser False Vampire Bat (Megaderma spasma) found in the Abandoned Gold Mine



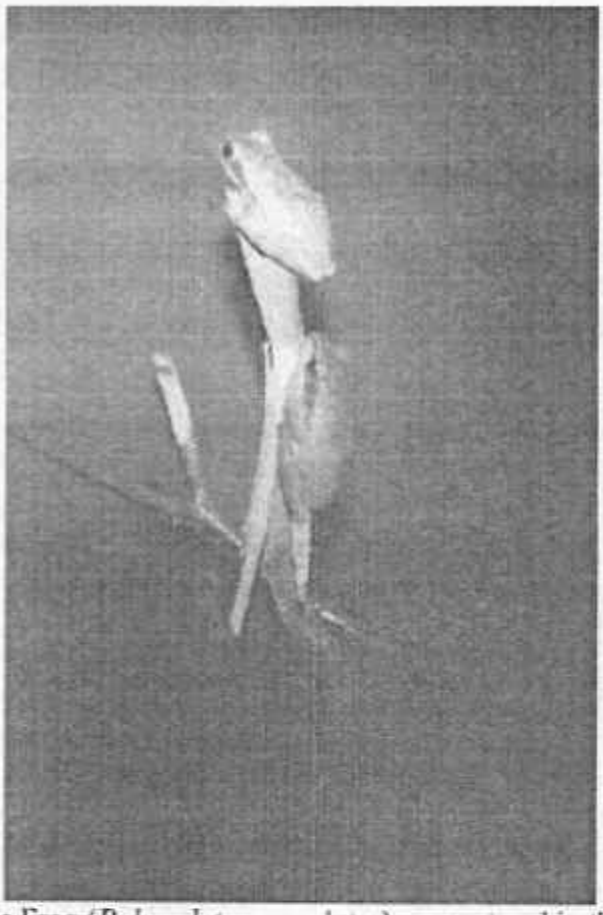
Horseshoe Bat (Rhynolophus spp.) encountered in the Abandoned Gold Mine



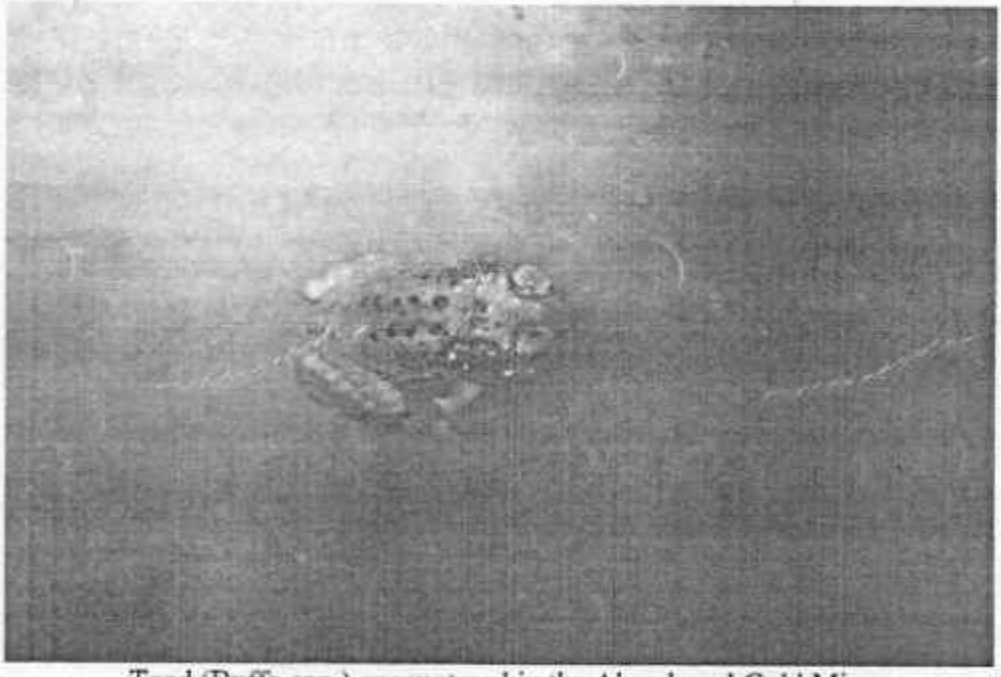
Leaf-nosed Bats encountered in the Abandoned Gold Mine



Mouse-tailed Bat (Rhinopoma spp.) encountered in the Abandoned Gold Mine



Common Indian tree Frog (*Polypedates maculatus*) encountered in the Abandoned Gold Mine



Toad (Buffo spp.) encountered in the Abandoned Gold Mine

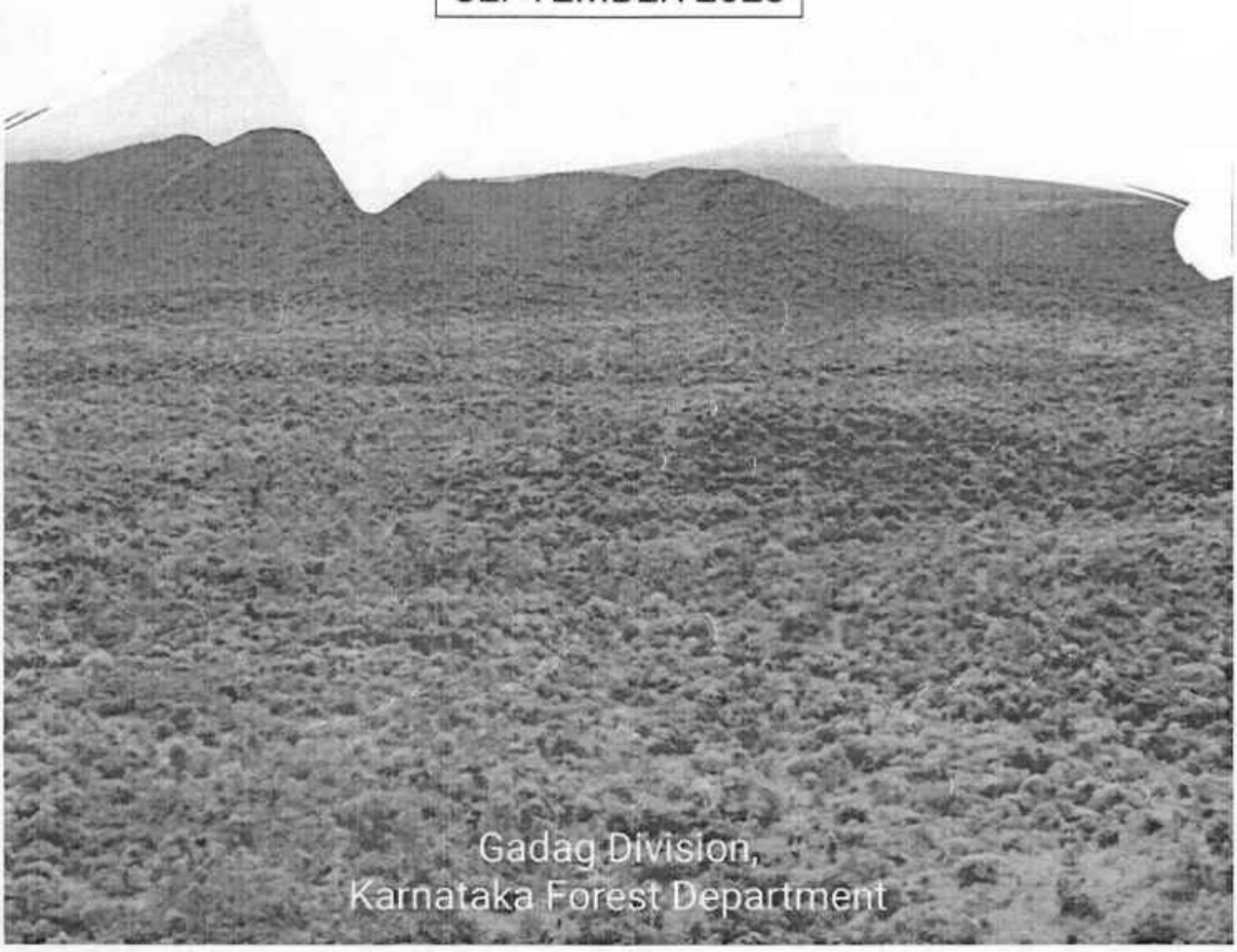
Spider (Arachnida spp.) encountered in the Abandoned Gold Mine

Preliminary Assessment of the Status of Mammalian Fauna

Kappathagudda

WILDLIFE SANCTUARY GADAG

SEPTEMBER 2023



Gadag Division,
Karnataka Forest Department

Project: Study on the status, habitat and conservation of Indian Grey wolf and associated carnivores at Kappathagudda Wildlife Sanctuary and other forest in Gadag Division

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

Karnataka Forest Department

KAPPATAGUDDA

Summary

India is a highly diverse country characterized by a rich array of flora and fauna thriving across its expansive and vast topographic conditions. The semi-arid area is one of the biogeographic regions with distinct characteristics, such as high temperatures, low precipitation, and frequent droughts, featuring thorny savannahs along with annual and perennial grasses. These arid landscapes, which encompass semi-arid ecosystems, are inherently uneven yet remarkably resilient. Consequently, the biodiversity found within these semi-arid regions holds particular significance. The study was carried out at Kappathagudda Wildlife Sanctuary, situated in the Gadag district of the southern Indian state of Karnataka, which falls under the semi-arid climatic zone. The study aimed to document the status and distribution of mammalian fauna and provide estimates of diversity, encounter rate, and abundance of mammalian fauna in Kappathagudda Wildlife Sanctuary. Line transects were laid down, and the total effort was 230 km with five replicates. A total distance of 2-8 km, covering 331.25 km, was walked in these beats for collecting carnivore sign survey data. A pair of camera traps were deployed across 48 locations in the Sanctuary for 30 days. Overall, 19 species of mammals were recorded, including four ungulates, two primates, three canids, three felids, two viverrids, one hyaenid, one herpestid, one leporid, one suidae, and one hystricidae. Among all the mammalian fauna, the Jackal had the highest encounter rate per km (0.42 ± 0.14), followed by the Indian grey wolf (0.25 ± 0.02) through sign survey. The camera trap study showed that the Jackal had the highest relative abundance index per 100 trap nights in the sanctuary (23.28 ± 7.73), followed by the Indian crested porcupine (11.54 ± 4.19). The study highlighted distinct activity patterns among different species, with some displaying nocturnal behavior while others, like jackals and jungle cats, were active during the day. The study emphasizes the need for continued research, particularly focusing on prey assessment, wolf tracking, and in-depth studies on carnivore spatial distribution patterns. Additionally, it addresses challenges such as human encroachment, habitat fragmentation, and the impact of windmills on biodiversity. The study proposes a way forward, recommending an extensive research initiative on prey populations, advanced tracking methods for wolves, and comprehensive investigations into the spatial distribution patterns of leopards, striped hyenas, and Indian grey wolves. The study also advocates for a detailed examination of wolf-human conflicts to enhance coexistence strategies. In conclusion, the study provides insight into the mammalian fauna of the Kappathagudda Wildlife Sanctuary, shedding light on the diversity, distribution, and behavior of species in this unique semi-arid ecosystem. The proposed future actions aim to contribute to effective wildlife management and conservation strategies, ensuring the preservation of this biodiversity in the sanctuary amid growing challenges.

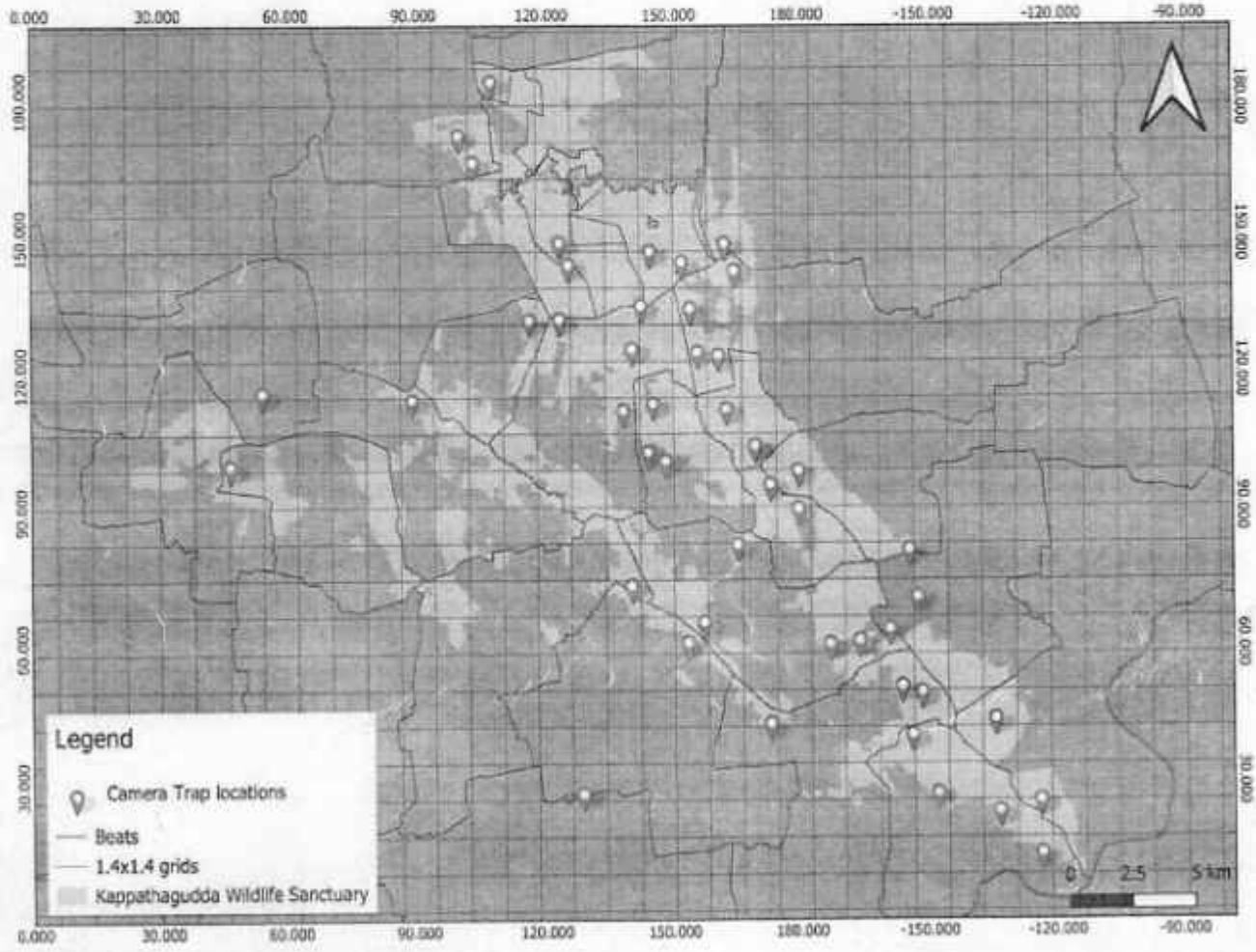
Methodology:

1. Transect surveys:

Line transect and sign survey data was collected between 7th to 9th May, 2023. Line transects were laid in 23 beats of the Sanctuary. The total effort was 230 km with five replicates.

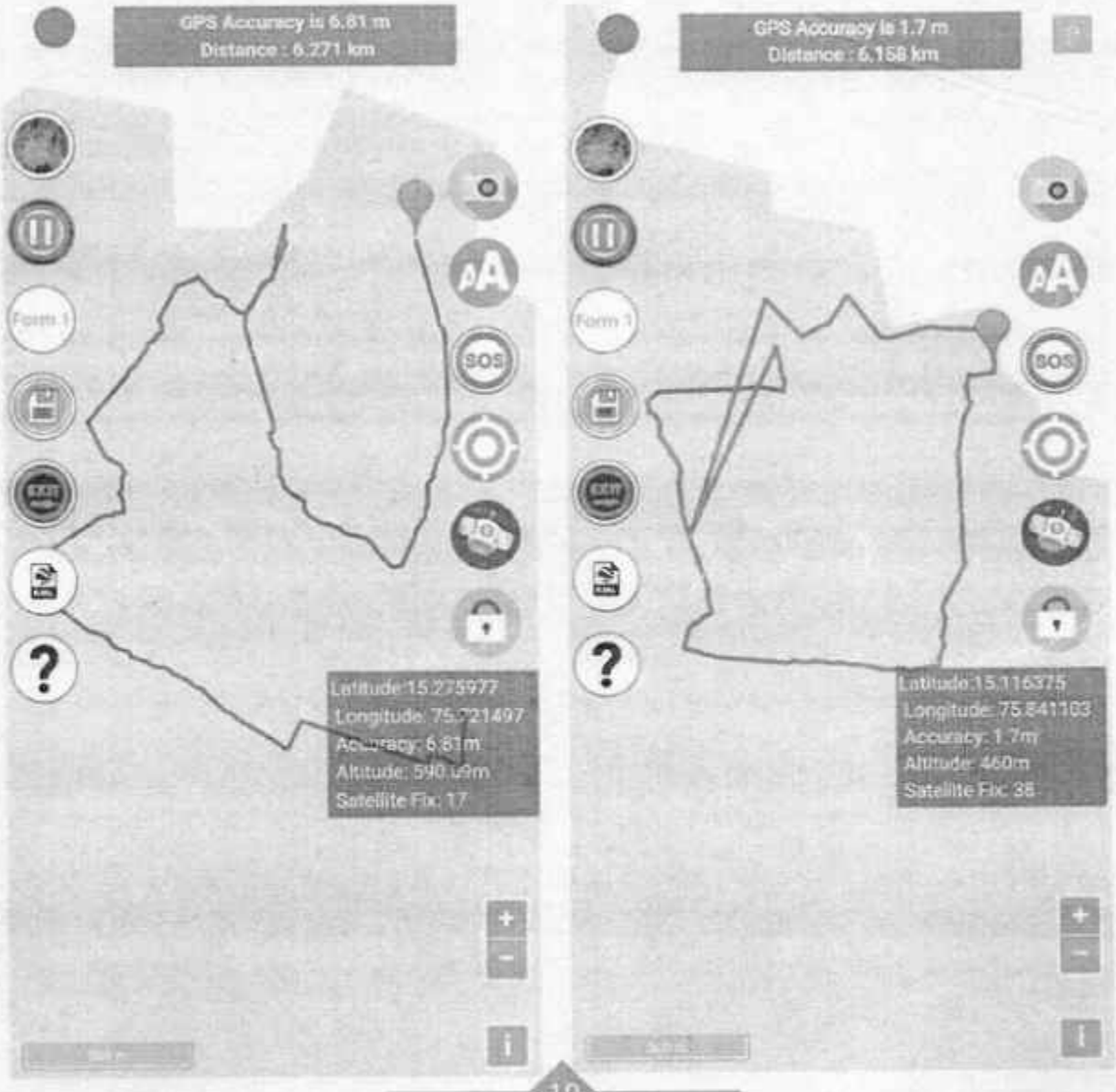
2. Sign surveys:

Sign surveys were also conducted in all the 23 beats. A total of 2-8 km distance covering 331.25 km were walked in these beats for collecting carnivore sign survey data. Direct signs like sighting, and indirect signs such as scat, pug marks, scrape marks, calls, and kills of mammals were recorded with their GPS coordinates. Other details such as terrain, vegetation, forest type, etc. were also noted.



Map 2: Camera trap locations in Kappathagudda Wildlife Sanctuary.


Latitude: 15°13' 1" N
Longitude: 75°44' 38" E
Elevation: 696.61±7 m
Accuracy: 9.8 m


GPS Accuracy is 6.81 m
Distance : 6.271 km
Latitude:15.275977
Longitude: 75.221497
Accuracy: 6.81m
Altitude: 540.09m
Satellite Fix: 17
GPS Accuracy is 1.7 m
Distance : 6.158 km
Latitude:15.116375
Longitude: 75.841103
Accuracy: 1.7m
Altitude: 460m
Satellite Fix: 38

3. Camera trap surveys:

Camera traps (Cuddeback C1) were deployed in various beats based on active animal trails, vantage points, and strategic locations based on earlier sign surveys. A pair of camera traps were deployed across 48 locations in the Sanctuary from 1st June to 1st July 2023. Camera traps were set to operate for 24 hours daily and programmed to take sequential photographs. At each station, camera traps were installed for approximately 30 days and checked at weekly intervals.

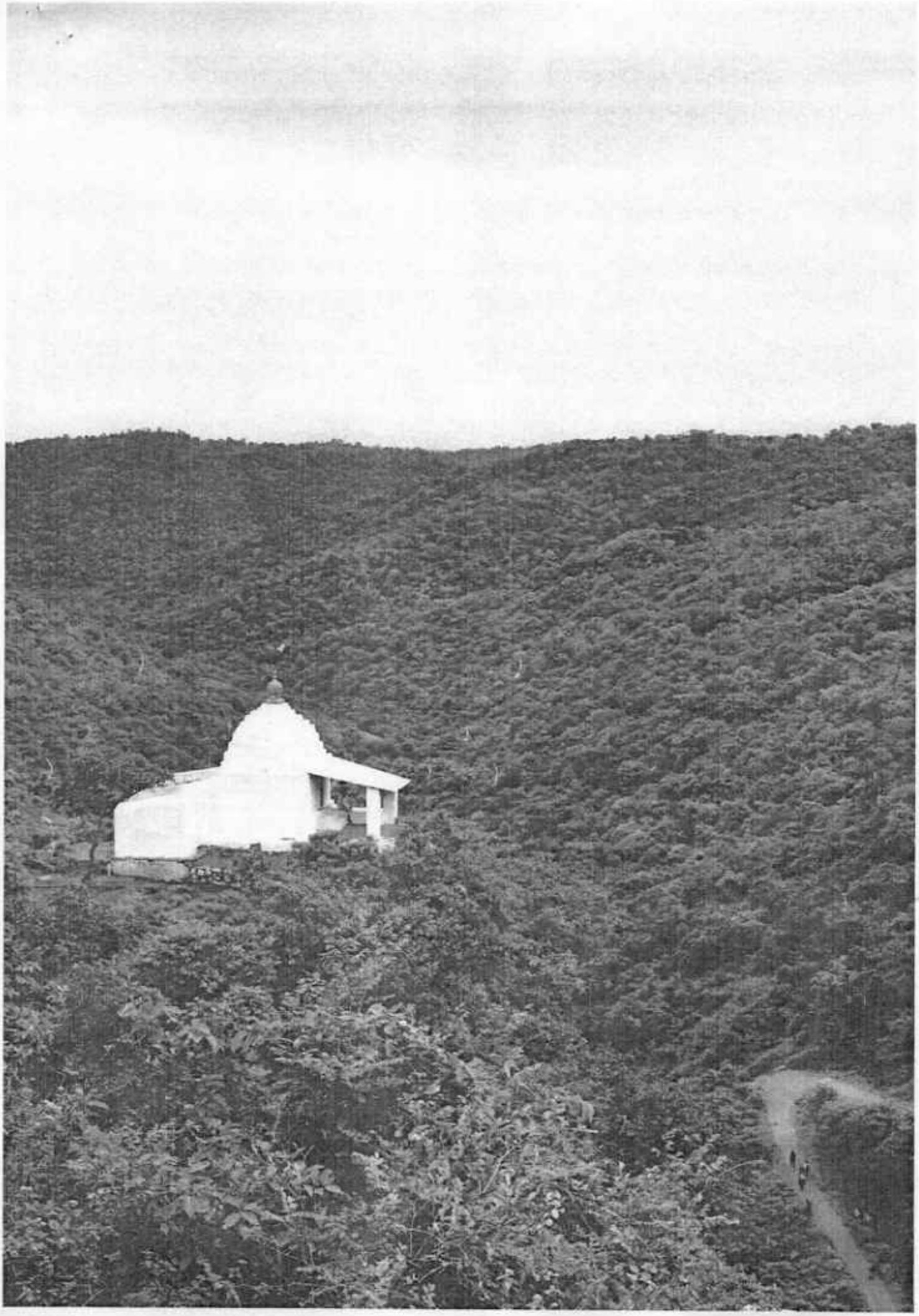
Data analysis:

1. Encounter rates (ER) were calculated from sign survey data. The encounter rate is the total number of signs divided by the distance walked in each trail. It was calculated for only those species which were identified by direct and indirect evidences.

$$EN = \frac{\text{Number of signs of individual species}}{\text{total distance travelled in km}}$$

2. Relative abundance index (RAI): Based on phoographic records from the 48 camera trap stations installed in various locations for 30 days constituting an effort of 1440 trap days, the RAI was calculated. RAI for individual species was calculated as the number of photographs per species per camera trap effort (13).

$$RAI = \frac{\text{Number of Photographs of Individual species}}{\text{camera trap effort}} \times 100$$



protected area into complete villages. This encroachment not only diminishes the ecological integrity of the sanctuary but also exacerbates human-wildlife conflicts. Also frequent human movement inside the sanctuary has to be minimized by way of limiting access to roads and providing alternatives to these roads to the villagers.

Forest fires although an integral part of grassland management, if uncontrolled can severely impact the regeneration potential of the forests. This can lead to shift of prey species to better forests nearby thereby affecting the biodiversity of the sanctuary. Most fire incidents are anthropological in nature due to various reasons. It's a common belief among the shepherds and goatherds in this region, that setting fire to the hillocks, result in fresh flush of grass species which is good for increase in milk production and breeding potential of the livestock. Only a consultative approach with these stakeholders can help in controlling this haphazard pattern of forest fire episodes. Rotation grazing can be adopted so as to minimize the impacts of overgrazing and deliberate setting of fire in these hillocks.

Before the official notification of Kappathagudda as a wildlife sanctuary, windmills were extensively installed throughout the region by diversion of forest under Forest Conservation Act, 1980. This infrastructure not only results in habitat loss but also could have severe effects on avian populations, disrupting their migratory patterns and may posing a threat to overall biodiversity. A detailed investigation in to the impacts of wind farms may be conducted as they have been known to generate significant noise, obstruct paths of birds (especially bird of prey) leading to mortalities. Also the indirect impacts of such farms is unaccounted for in the region.

the interbreeding of feral dogs with Indian wolves disrupts the social structure of the latter, potentially leading to a decline in the wolf population within the sanctuary. Moreover, feral dogs act as carriers of diseases, further compromising the health of the indigenous wildlife (18).

The sign encounter rate of leopards was low, and the signs were only encountered in the Kadkol, Bagewadi, Hirewaddatti, and Doni sections of Kappathagudda Wildlife Sanctuary. The Gadag and Koppal districts of northern Karnataka are one of the few remaining important habitats of Indian grey wolves in southern India. However, due to improved vegetation cover and the availability of water, more Leopards probably intrude into new forested areas from nearby sanctuaries, and the intrusion of Leopards may have resulted in the exclusion of Indian grey wolves in the area (20). The sign distribution and photographic evidence show the occurrence of striped hyenas across all sections of the Kappathagudda Wildlife Sanctuary, which is significant in the area, as striped hyenas play an important role in maintaining ecosystem services such as controlling disease and scavenging livestock carcasses (19).

Apart from the major carnivores present in the Kappathagudda Wildlife Sanctuary, a variety of prey inhabit the area, including Blackbuck, Black-naped hare, Chinkara, Four-horned antelope, Spotted deer, Indian crested porcupine, and Wild boar. Five varieties of large-sized prey were identified in Kappathagudda, of which four belong to antelope species and one to the deer species. Sign distribution and photographic evidence indicate that prey species are well-distributed across most sections of the Kappathagudda Wildlife Sanctuary. However, the abundance of medium-sized prey is high, including Indian crested porcupines and wild pigs. Blackbuck emerged as the most abundant prey species (8.02±3.02) in Kappathagudda, likely due to the availability of open habitats with edible grasses.

In addition to capturing images of wild animals, camera traps frequently recorded pictures of animals grazing and human presence in these sections. Such activities should be restricted to outside the protected areas. Previous studies have demonstrated that wild herbivores benefit from a reduction in livestock presence in these areas (21).

In addition to that, the advent of advanced irrigation facilities has catalyzed a shift towards cash crops such as sugarcane and bananas. However, this transition poses a challenge, as these cash crops demand a higher water input, exacerbating water scarcity issues in the inherently arid environment which changes the habitat. The Kappathagudda WLS is characterized by a fragmented landscape, divided into patches, hindering the movement of wildlife within the sanctuary. The construction of water canals further compounds the issue by impeding the natural pathways of wildlife, posing a significant obstacle to their ecological behavior.

Human encroachment into protected areas presents a major challenge for the conservation of Kappathagudda WLS. The encroachment has resulted in the degradation and destruction of the buffer zone, converting sections of the

DISCUSSION

The Kappathagudda Wildlife Sanctuary was notified in May 2019 by the Government of Karnataka under the Wildlife Protection Act, 1972. A large part of Shirahatti and Mundargi forest ranges while only a small part of the Gadag range fall within the Sanctuary. Although the sanctuary comprises promising levels of biodiversity, no systematic study has been conducted to ascertain the diversity of mammalian fauna within it. Hence with a view to initiate the frontline staff into scientific management of the Sanctuary, three forest officials of the Division were sent to Wildlife Institute of India, Dehradun to undergo a three months comprehensive training in aspects of wildlife management, survey techniques and documentation of the findings. Under the leadership and guidance of these forest officials, the Deputy Conservator of Forests along with Dr. Salvador Lyngdoh decided to carry out a preliminary survey of mammalian fauna within the Sanctuary so as to train the staff in data collection, develop a keen eye for recording evidences of animal movement and documenting their findings in a scientific manner for further analysis. The efforts put by the staff were commendable and hence a systematic study could be conducted during the month of May, 2023.

As part of the study, sign surveys, line transects, and camera trap methods were used to estimate encounter rates and relative abundance of the mammalian fauna. Sign surveys, although laborious, stand out as one of the most affordable methods for monitoring mammalian fauna. Conversely, camera traps, known for their effectiveness, are considered less labor-intensive. It is important to note that, despite the labor-intensive nature of sign surveys, the reliability of the data heavily relies on the surveyors' confidence in species identification (14).

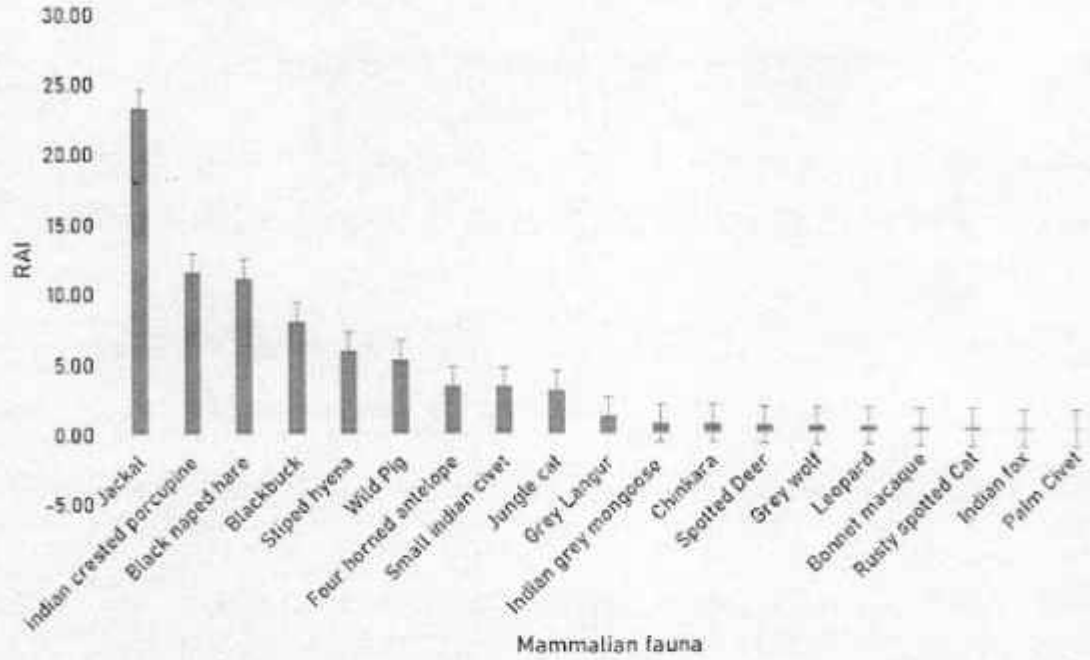
Through the implementation of these field methods, a total of 19 species were observed. The Jackal exhibited the highest encounter rate of 0.42 per km and a maximum relative abundance index. The sign distribution indicates the widespread occurrence of Jackals across the Kappathagudda Wildlife Sanctuary, possibly attributed to their habitat flexibility and opportunistic feeding habits, allowing them to inhabit a variety of landscapes, including human-dominated agricultural areas (15).

The sign encounter rate of Indian grey wolves was 0.25 per km, with signs encountered across all the sections of the sanctuary. Despite the widespread distribution, the relative abundance of Indian grey wolves was low in the Kadkol, Dambal, and Bannikoppa sections of the sanctuary. The high sign encounter rate could have resulted due to the potential misidentifications of Indian grey wolf signs during the sign survey. Previous studies have indicated that wolves tend to be more prevalent outside protected areas due to the scarcity of wild prey or poor prey abundance, with Indian grey wolves thriving on domestic species (16). The spread of feral dogs in and around protected areas poses a substantial threat to wildlife and ecosystems (17). Forming formidable packs, these dogs engage in predatory behavior, impacting various species of wild ungulates. Furthermore,

Scientific name	common name	Relative abundance indices of mammalian fauna in Kopppatagudda Wildlife Sanctuary (Sections wise)								
		SHIRAHATTI	KADKOL	S O RTOR	DAMBAL	BAGEWADI	HIR E WAD ATTI	DONI	BANNIKOPPA	KALAKERI
Antilope cervicapra	Blackbuck	2.77 ± 2.00	25.55 ± 25.55	61.66 ± 18.33	26.66 ± 14.52	11.25 ± 6.36	20 ± 11.55	-	13.33 ± 3.33	1.66 ± 1.66
Lepus nigricollis	Black naped hare	12.22 ± 10.59	2.22 ± 1.11	18.33 ± 5.00	20 ± 12.61	60.20 ± 28.93	17.91 ± 13.50	11.66 ± 11.66	-	2.5 ± 2.5
Macaca radiata	Bonnet macaque	0.00 ± 0.00	3.33 ± 1.92	-	-	-	-	-	-	-
Gazella bennettii	Chinkara	-	-	3.33 ± 3.33	-	4.79 ± 1.68	0.83 ± 0.53	0.00 ± 0.00	3.33 ± 3.33	0.00 ± 0.00
Tetracerus quadricornis	Four horned antelope	1.11 ± 1.11	21.66 ± 14.81	16.66 ± 3.33	31.11 ± 27.84	8.12 ± 3.41	0.55 ± 0.32	8.33 ± 8.33	-	10.83 ± 4.1
Hyaena hyaena	Stiped hyena	5.55 ± 1.11	2.22 ± 2.22	15 ± 8.33	4.44 ± 2.22	15 ± 5.81	7.08 ± 2.69	3.33 ± 00	8.33 ± 1.67	4.16 ± 2.5
Vulpes bengalensis	Indian fox	-	-	-	-	0.83 ± 0.83	-	-	-	-
Canis aureus indicus	Jackal	78.88 ± 70.71	48.88 ± 31.51	46.66 ± 13.33	51.11 ± 12.81	51.04 ± 17.31	5.69 ± 1.40	5 ± 1.66	13.33 ± 3.33	12.5 ± 7.5
Felis chaus	Jungle cat	3.88 ± 3.09	6.66 ± 4.40	1.66 ± 1.66	-	16.45 ± 12.86	4.16 ± 3.08	5.554.44	1.66 ± 1.67	-
Semnopithecus	Grey Langur	-	1.11 ± 1.11	-	-	3.95 ± 3.69	-	16.11 ± 16.11	-	-
Panthera pardus	Leopard	-	1.66 ± 0.96	-	-	6.45 ± 6.18	0.27 ± 0.27	1.66 ± 1.66	-	-
Urva edwardsii	Indian grey mongoose	2.22 ± 2.22	-	-	-	2.91 ± 1.72	-	0.55 ± 0.55	1.66 ± 1.66	-
Paradoxurus hermaphroditus	Palm Civet	-	-	-	-	2.5 ± 2.5	-	-	-	-
Hystrix indica	Indian crested porcupine	1.11 ± 1.11	49.44 ± 33.66	20 ± 6.66	17.77 ± 11.27	17.08 ± 8.05	8.47 ± 3.02	10.55 ± 2.77	-	1.66 ± 1.66
Prionailurus rubiginosus	Rusty spotted Cat	-	1.66 ± 1.66	-	-	0.83 ± 0.83	-	-	-	-
Viverricula indica	Small indian civet	4.44 ± 2.93	10.55 ± 7.67	3.33 ± 3.33	-	10.20 ± 4.77	4.16 ± 0.27	5.55 ± 1.11	-	-
Axix axis	Spotted Deer	2.22 ± 2.22	-	-	-	1.66 ± 1.66	-	-	-	-
Sus scrofa cristatus	Wild Pig	3.88 ± 2.00	14.44 ± 6.54	6.66 ± 3.33	7.77 ± 4.44	16.04 ± 3.65	8.47 ± 3.10	13.33 ± 10	-	6.66 ± 3.33
Canis lupus	Grey wolf	-	2.22 ± 2.22	-	1.11 ± 1.11	-	-	-	3.33 ± 0.00	-

Table 3: Relative abundance index of each mammalian fauna in different sections of the Kappathagudda Wildlife Sanctuary

Relative abundance indices of mammalian fauna



Graph 2: Showing the relative abundance of species in Kappathagudda WLS

The total trap effort of 1440 in 48 trap locations revealed the relative abundance indices with ± standard error for all mammalian species captured in the camera traps. Among these mammals, Jackal had the highest relative abundance index per 100 trap nights species in the sanctuary (23.28 ± 7.73), followed by Indian crested porcupine (11.54 ± 4.19), Black-naped hare (11.11 ± 2.73), Blackbuck (8.02 ± 3.02), Striped hyena (5.95 ± 1.01), Wild pig (5.37 ± 0.83), Four-horned antelope (3.48 ± 1.06), Small Indian civet (3.44 ± 1.06), Jungle cat (3.19 ± 0.93), Grey langur (1.28 ± 1.0), Indian grey mongoose (0.73 ± 0.26), and Chinkara (0.71 ± 0.25). Conversely, the species with the lowest abundance were Spotted deer (0.58 ± 0.55), Indian grey wolf (0.46±0.23), Leopard (0.31 ± 0.19), Bonnet macaque (0.30 ± 0.30), Rusty-spotted cat (0.25 ± 0.23), Bengal fox (0.11 ± 0.11), and Palm civet (0.09 ± 0.09).

Scientific name	Common name	Encounter rate per km in different sections of Kappathagudda Wildlife Sanctuary								
		1	2	3	4	5	6	7	8	9
Antilope cervicapra	Blackbuck	–	0.1	0.03	0.06	0.37	–	–	0.1	0.16
Lepus nigricollis	Black naped hare	–	0.1	0.03	0.03	0.45	–	–	0.4	0.1
Gazella bennettii	Chinkara	–	0.05	–	–	–	–	–	–	0.03
Tetracerus quadricornis	Four horned antelope	–	–	–	–	–	–	–	–	–
Hyaena hyaena	Striped hyena	0.12	0.13	0.34	0.24	0.16	0.16	0.18	0.31	0.05
Vulpes bengalensis	Bengal fox	0.24	–	0.08	0.24	0.18	0.08	0.03	0.21	0.05
Canis aureus indicus	Jackal	1.53	0.47	0.34	0.24	0.38	0.41	0.18	0.05	0.15
Felis chaus	Jungle cat	0.47	0.34	0.03	–	0.14	0.08	0.03	0.05	0.15
Semnopithecus	Grey Langur	–	–	0.1	–	–	–	0.5	–	–
Panthera pardus	Leopard	0.12	–	0.03	0.02	–	0.04	0.03	–	0.03
Paradoxurus hermaphroditus	Palm Civet	–	0.02	–	–	–	–	–	–	–
Hystrix indica	Indian crested porcupine	0.12	0.36	0.21	0.02	–	–	0.15	–	0.05
Viverricula indica	Small Indian civet	–	–	–	0.14	0.06	–	–	0.05	–
Axix axis	Spotted Deer	–	–	–	–	–	–	–	–	0.13
Sus scrofa cristatus	Wild Pig	0.5	0.04	0.03	0.1	0.6	–	–	–	–
Canis lupus	*Indian grey wolf*	0.35	0.11	0.29	0.33	0.2	0.25	0.21	0.26	0.26

Table 2: Represents the encounter rate per km of mammals section wise. Protected Areas: 1 - Sortur, 2 - Hirewaddatti, 3 - Kadkol, 4 - Shirahatti , 5 - Bagewadi , 6 - Doni, 7 - Kalkeri 8 - Bannikoppa, 9 - Dambal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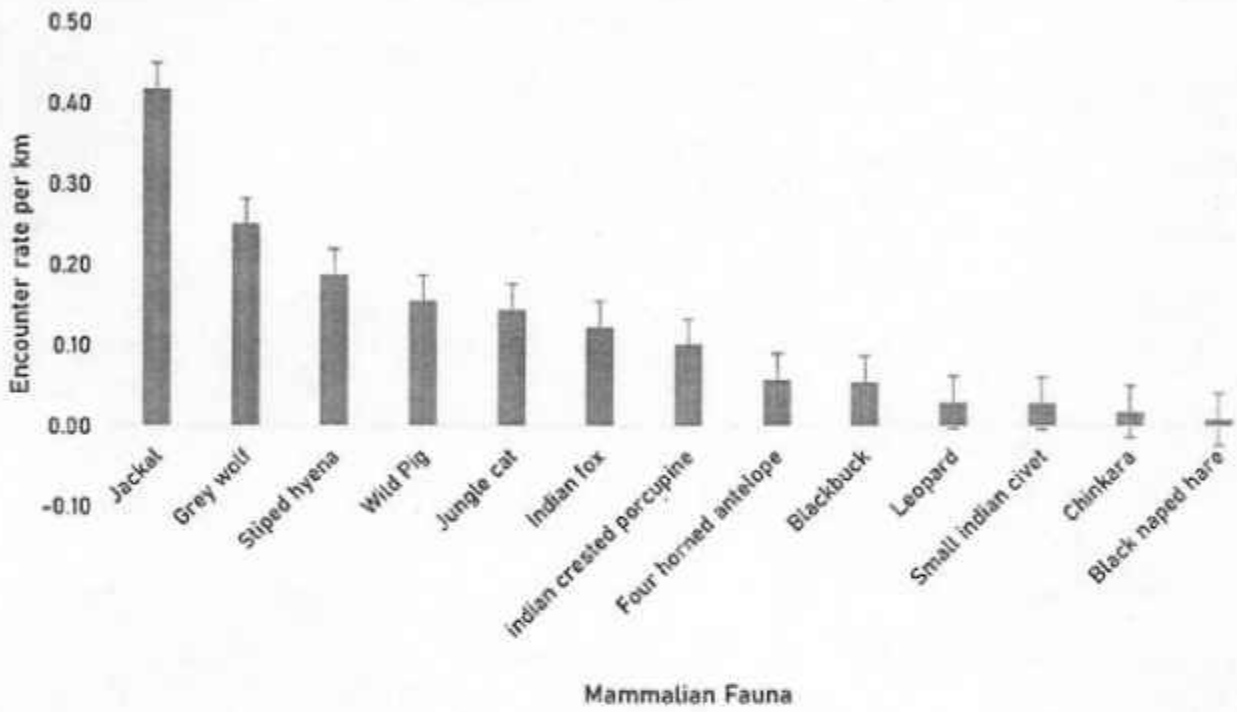


Graph 1: Showing the encounter rate per km of mammalian fauna in Kappathagudda wildlife sanctuary

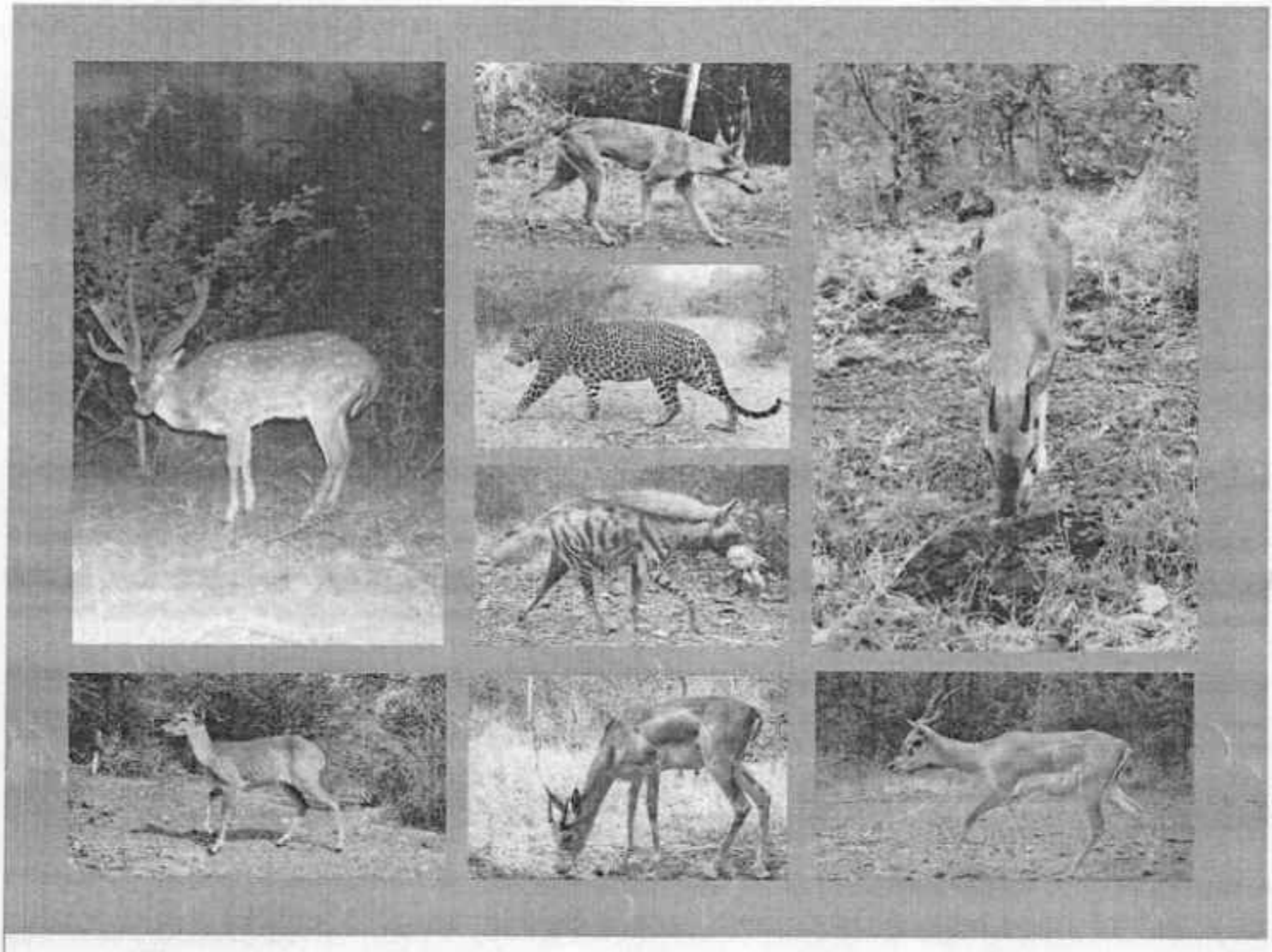
The mean encounter rate per kilometer was calculated for each mammalian species. Among all the mammalian fauna, Jackal had the highest encounter rate per km (0.42 ± 0.14), followed by Indian grey wolf (0.25 ± 0.02), Striped hyena (0.19 ± 0.03), Wild pig (0.15 ± 0.07), Jungle cat (0.14 ± 0.05), Indian fox (0.12 ± 0.03), Indian crested porcupine (0.10 ± 0.04), Four-horned antelope (0.06 ± 0.02), Blackbuck (0.05 ± 0.02), Leopard (0.03 ± 0.01), Small Indian civet (0.03 ± 0.01), Chinkara (0.02 ± 0.01), and Backed Naped hare (0.01 ± 0.006).

Scientific name	Common name	Food Habit	IUCN Status	Wildlife (Protection) Amendment Act 2022	Species recorded through different in Kappat hagudda Wildlife Sanctuary		
					Sign Survey	Direct Sighting	Camera Trap
Antilope cervicapra	Blackbuck	H	LC	Schedule I	+	+	+
Lepus nigricollis	Black naped hare	H	LC	Schedule II	+	+	+
Macaca radiata	Bonnet macaque	H	V	Schedule I	-	-	+
Gazella bennettii	Chinkara	H	LC	Schedule I	+	+	+
Tetracerus quadricornis	Four horned antelope	H	V	Schedule I	+	-	+
Hyaena hyaena	Striped hyena	C	NT	Schedule I	+	-	+
Vulpes bengalensis	Bengal fox	O	LC	Schedule I	+	-	+
Canis aureus indicus	Jackal	O	LC	Schedule I	+	-	+
Felis chaus	Jungle cat	C	LC	Schedule I	+	-	+
Semnopithecus	Grey Langur	H	LC	Schedule I	-	+	+
Panthera pardus	Leopard	C	V	Schedule I	+	-	+
Urva edwardsii	Indian grey mongoose	C	LC	Schedule I	-	-	+
Paradoxurus hermaphroditus	Palm Civet	O	LC	Schedule I	+	-	+
Hystrix indica	Indian crested porcupine	H	LC	Schedule I	+	+	+
Prionailurus rubiginosus	Rusty spotted Cat	C	NT	Schedule I	-	-	+
Viverricula indica	Small Indian civet	C	LC	Schedule I	+	-	+
Axix axis	Spotted Deer	H	LC	Schedule II	-	+	+
Sus scrofa cristatus	Wild Pig	H	LC	Schedule II	+	+	+
Canis lupus	Grey wolf	C	LC	Schedule I	+	-	+

Table 1: Mammals were recorded in Kappathagudda Wildlife Sanctuary through camera traps, sign surveys, and direct sighting. The plus sign indicates the presence of a species, while the minus sign indicates its absence under each method.

Results:

The total effort of 230 km of transect from 69 trails and 48 camera trap stations resulted in sign encounters and photographic rates of various species. 378 fecal samples were also collected from the sanctuary. 15 species were detected through sign surveys which were then confirmed by photographic captures, which recorded 19 species of mammals i.e. four ungulates, two primates, three canids, three felids, two viverrids, one hyaenid, one herpestid, one leporid, one suidae, and one hystricidae. Rusty-spotted cat, a near threatened species and also the smallest cat species was also recorded in the Bagewadi section through camera trap.



Among the 19 mammalian species recorded in the Kappathagudda Wildlife Sanctuary, two are categorized as near Threatened, three as Vulnerable and fourteen as Least Concern according to the IUCN Red List of Threatened Species (IUCN, 2023).


Latitude: 15.211868
Longitude: 75.749207
Elevation: 677.73 m
Accuracy: 22.5 m