
**Assessment of Forest Fire in
Rairangpur Forest Division, Odisha,
India Phase I (2021)**

Assessment of Forest Fire in Rairangpur Forest Division, Odisha, India Phase I (2021)

A report submitted

To

Dr. Arun Kumar Mishra IFS
RCCF, Rourkela Circle, Odisha

By

Dr. Sanjeet Kumar
Ambika Prasad Research Foundation, Odisha



AMBIKA PRASAD RESEARCH FOUNDATION, ODISHA

**Assessment of Forest Fire in
Rairangpur Forest Division, Odisha,
India Phase I (2021)**

Document Control Page

Subject	Assessment of Forest Fire in Rairangpur Forest Division, Odisha, India Phase I (2021)
Report Title	Assessment of Forest Fire in Rairangpur Forest Division, Odisha, India Phase I (2021)
Published by	APRF Publishers
Submitted to	Dr. Arun Kumar Mishra IFS RCCF, Rourkela Circle, Odisha
Supported by	Rairangpur Forest Division, Odisha
Edition	2021
Originator	Rajkumari Supriya Devi, Sweta Mishra, Sugimani Marndi, Subhadarshini Satapathy
1st Reviewer	Dr. Sanjeet Kumar
2nd Reviewer	Dr. Arun Kumar Mishra

Copyright © Ambika Prasad Research Foundation

This publication has been made with the best to provide the authenticated information. This report can be reproduced in whole or part for educational or non-profit services without permission, provided acknowledgement of the source is made. All the references necessary are listed. All attempts have been made to published reliable information and acknowledge the copyright holders. If any copyright material(s) have not been acknowledged, please inform us so we may rectify our future reprints.

Contact Details

Ambika Prasad Research Foundation
5F/561, CDA Sec 9, Cuttack, Odisha
Email id: sanjeet.biotech@gmail.com
www.aprf.co.in

Designed by: APRF, Odisha

Acknowledgement

We are very thankful to the Principle Chief Conservator of Forest (PCCF) and Head of Forest Force (HoFF), Odisha State Forest Department, Odisha. We are also thankful to Dr. Arun Kumar Mishra, RCCF, Rourkela Circle; Divisional Forest Officer, Assistant Conservator of Forest, Range Officers, Forest Guards, and other Forest Officials of Rairangpur Forest Division for their valuable support, coordination and facilities provided during the survey of forest fire. We are also grateful to the local inhabitants who had extended their help in collecting the information and other support during the survey. Again, we are thankful to all the people who had directly or indirectly helped in the successful completion of the survey works of forest fire.

Summary

Forest fire has been a burning issue since a long time back. There has been a tremendous controversy about the impacts of forest fire on forest wealth. Although, it has been, an aged old practice or phenomena in most of forest patches in India, the problem still prevails every year with adverse impacts on the ecosystem. To understand the ground reality and the different aspects of forest fire, an attempt has been made to study the nature of forest fire, causes and opinions of local communities lying in or around the Rairangpur Forest Division, Odisha, India. The survey includes the observation of the forest fire areas immediately and after monsoon. The loss of plants that were burnt were studied by comparative evaluation of burnt and unburnt areas during the burning season. Again, the same study areas were restudied for the comparative evaluation and the regeneration rate and after monsoon. Many remarkable differences have been observed on the study areas (burnt areas) after the monsoon. Ground flora including ground orchids and many other herbs were noted from such areas after the monsoon. Interaction with the local communities was one of the important parts of the survey as it provided many information about the opinions about the forest fire. The survey revealed the nature of forest fire, causes of forest fire, benefits and loss, its impacts on the ecosystem in the study areas.

The team of Ambika Prasad Research Foundation with the forest officials of Rairangpur Forest Division visited many sites where forest fire was still burning, where fire had just extinguished or where fire had occurred few days back. However, many incredible observations were made on those areas. In spite of the fire, many life forms including insects like ants, worms, spiders, etc. migrated few distance above at the tree or inside the soil. The survey also revealed some indicator birds where such birds would fly above the burning areas looking for its prey. After a critical evaluation of the basic observation, the causes were noted down in the study areas and some recommendations have been made for the management of forest fire. The recommendation also includes a model which is illustrated as potential strategy for the management of forest fire. This model is mainly based on the distribution of budget of forest fire and involvement of local communities in mitigation of the forest fire in Rairangpur Forest Division in particular and Odisha state in general.

Table of Contents

Sl. No.	Subject	Page No.
1.	Introduction	1-3
2.	Materials and Methods	4
3.	Peculiar Findings – Nature of Fire	5-7
4.	Peculiar Findings – Comparison between burnt and unburnt areas	8-9
5.	Peculiar Findings – Comparison of burnt areas after forest fire and the consecutive monsoon	10-13
6.	Interactions with the local communities	14-15
7.	Indicators	16
8.	Current strength of Forest Fire Management	17
9.	Benefits of forest fire in study areas as per the local communities	18-20
10.	Loss of forest fire in study areas and in general	21-23
11.	Some observations during the survey of forest fire	24-28
12.	Strategy or model for management of forest fire in study areas	29-30
13.	Recommendations	31-32
14.	Team Activities	33-35
15.	Annexure I - Passport Data Form for Forest Fire (For Local Inhabitants)	36-38
16.	Annexure II - Passport Data Form for Forest Fire (For Forest Officials)	39-43
17.	References	44

INTRODUCTION

Forest fire in India has been an aged old practice or phenomena which is still prevailing every year in many forest patches. Forest fire effect may differ depending upon the landscape and vegetation. It could have social and ecological benefits like recycling of nutrients, help in regeneration, remove invasive weeds, lowering of fuel loads on the one hand and it may cause the loss of biodiversity, effect the ecosystem functioning, could destroy the vegetation and could have significant impacts on the terrestrial, aquatic and atmospheric systems like soil erosion, loss of wildlife habitat, etc.

With the variation in the landscapes of the country, the nature of forest fire show significant variation which shows the difference in the intensity of the impacts brought about by the forest fire in India. Odisha state enjoys diverse vegetation including Tropical Semi-Evergreen Forest, Tropical Moist-Deciduous Forest, Tropical Dry-Deciduous Forest and Tidal Mangrove Forest. Tropical dry-deciduous covers about 50 % of the total forest areas representing the highest forest type cover in the state. Moist-deciduous forest covers



Forest fire during night

are the about 30 % of the total forest cover. Other forest types represent 20 % of the total forest cover. According to the Indian State Forest Report 2019 and based on the interpretation of IRS Resourcesat-2 LISS III satellite data, the total forest cover is reported to be 51,618.51 sq km which is about 33.15 % of the state's geographical area with the density of forest canopy of 4.48 % of very dense forest, 13.84 % of moderately dense forest and 14.83 % of open forest. The state has a recorded forest area (RFA) of 39.31 %, Reserved forest of 58.90 %, Protected forest of 40.75 % and Unclassed forest of 0.35 %. In tropical deciduous forest, forest fire is a recurring phenomenon which corresponds to the less precipitation and warm and dry summers. Climate change has brought about a major contribution in addition to the anthropogenic activities. The



Forest fire during day

climatic factors include temperature, rainfall, humidity, etc. Climate change with reference to forest fire means the erratic rains or very less or no precipitation during winters and early summers making it warm and dry. The occurrence of forest fire is common from January to May every year *i.e.*, the dry winters and early summers (SFF 2009). According to the Forest Survey of India Report 2019, broadly forest fire can be divided into 3 types viz. Surface fire, Ground fire and Crown fire. The dry and moist tropical deciduous forest are prone to surface fire where the thick leaf litters, dry twigs, shrubs over the ground easily catches fire as it is dry and works as a fuel. Surface fire refers to burning of dry litters, twigs, dry shrubs and some ground vegetation of the forest floor. This type of fire is frequent in many forest areas of the state. Many times, surface fire is confused with ground fire. Ground fire could be more

damaging as it not only burnt the litter on forest floor but also the root and other organic matter beneath the surface. Crown fire is not seen in Tropical Deciduous forest but are more common in Himalayan regions where there are oak and pine vegetation. In this type of fire, the tree canopy easily catches fire and spread rapidly through wind (Ababa 2020). Reports by the Ministry of Environment, Forest and Climate Change in 2018 revealed that forest fire is caused by natural as well as anthropogenic activities.

Natural processes like lightening, friction, volcanic eruption, etc. but forest fire in most cases have been due to anthropogenic activities. To escape from weeds and bushes next to reserved forest, due to the uncontrolled burning of early season burning of agricultural lands, negligence disposal of cigarettes, collection of NTFPs. Collection of NTFPs has been the major cause of forest fire in states like Chhattisgarh, Madhya Pradesh, Jharkhand, Odisha and Telangana. Forest fire incidences recorded for the year 2021 during forest fire season in Odisha is 56,543; in Mayurbhanj is 4,544 and in Rairangpur Forest Division is 357 (Figure 1). Considering the diverse impacts of forest fire that have been documented so far, an attempt has

been made to survey on different aspects of forest fire in Rairangpur Forest Division from December 2020 to June 2021, a period where forest

fire was on peak to the consecutive monsoon.

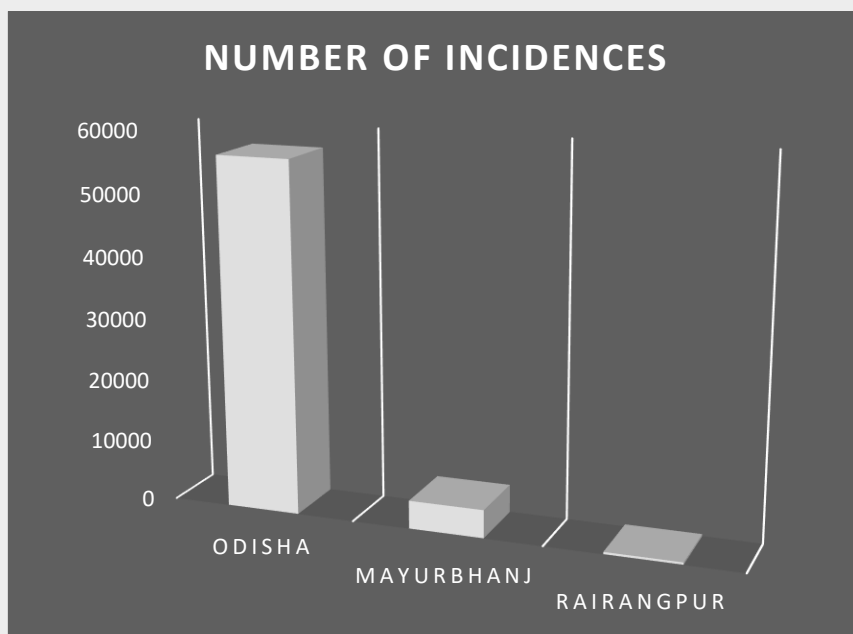


Figure 1: Comparative incidences of forest fire

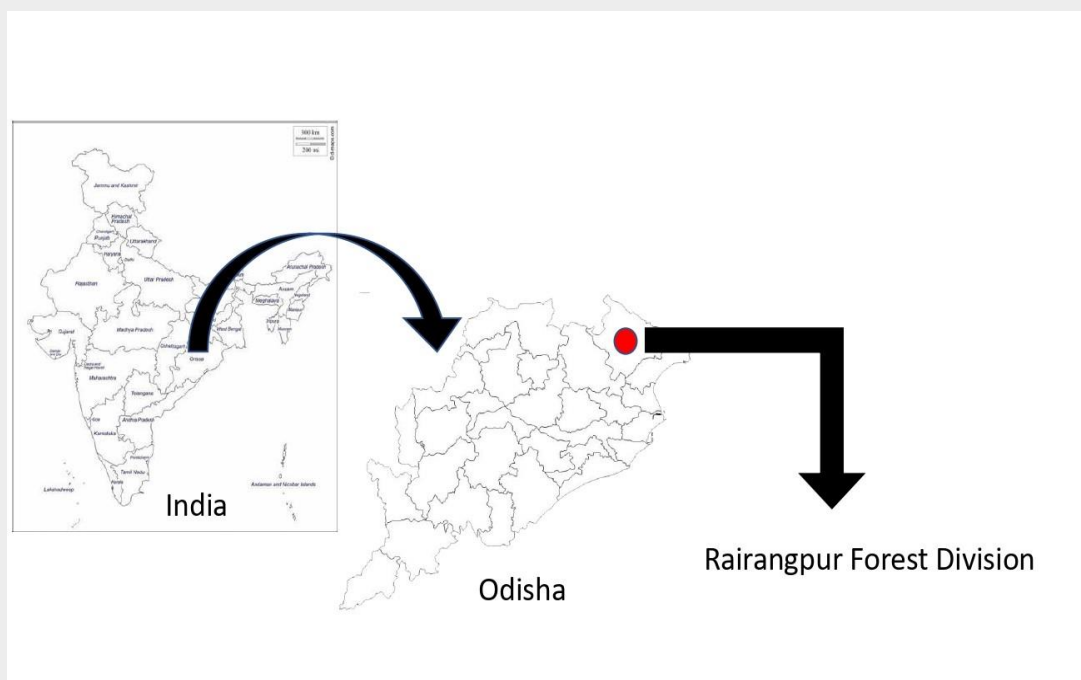


Figure 2: Study area for the survey of forest fire

MATERIALS AND METHODS



Interviewing local communities through semi-structured questionnaire using Passport Data Form

The survey on forest fire carried out as a case study in Rairangpur Forest Division, Odisha from December 2020 to June 2021 (Figure 2). During the survey, a team of Ambika Prasad Research Foundation (APRF) along with the Forest officials of Rairangpur Forest Division surveyed several areas where forest fire took place or where fire was still burning with rage. Observations of these areas were noted and analyzed. The comparative study was done between the burnt area and the unburnt areas. The survey would have been incomplete without the local community interaction and so the study further extended to interviewing the local communities

in an around the forest through semi-structured questionnaire using Passport Data Form (PDF).

The interview was also done for the forest officials with a different set of questionnaires using PDF (Annexure-I-II). The survey continued periodically from winter, early summer, summer to monsoon. Comparison of the burnt areas was also done between early summer and the consecutive monsoon. The comparative study of these areas using different factors were also done to understand the impacts of forest fire on these areas.

PECULIAR FINDINGS

Nature of Fire

The period of forest fire in the study areas were observed mainly from February to April, when the atmosphere is dry and warm with very less to no precipitation. The nature of fire in these areas is mostly a surface fire that burns the thick dried leaves, dried shrubs, climbers and herbs. The dried twigs or dead logs on the surface of forest floor are normally burnt. The intensity of heat in this fire is less as the fuel are mainly dried leaves and dried twigs. During night time, the fire spreads slowly while during day time, it spreads rapidly and sometimes it could raise till the height of 5-10 feet. In some cases, it reaches till the height of 12 feet. Fire could be inside the forest, under the tree or it could be in an open field normally the paddy field



Wild fire during daytime with high flames





Comparison between burnt and unburnt areas

Burnt areas with no ground flora, no insects on soil surface, flower shredding of Sal tree, burnt tree barks and dried leaves from tree canopy

Comparison between burnt and unburnt areas

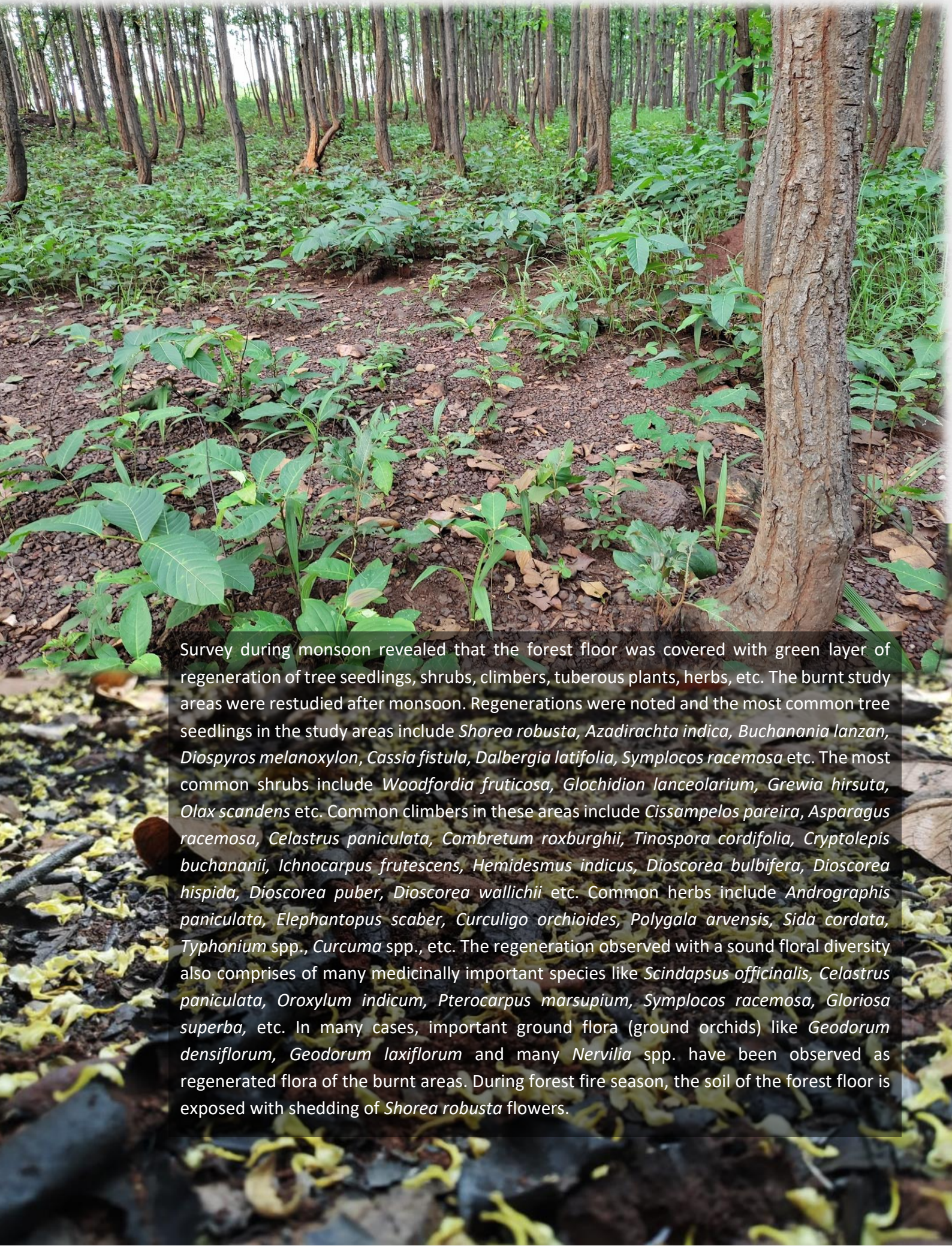


The forest floor of the unburnt side of the study areas were covered with thick layer of dried leaves, dried shrubs, dried herbs, dried twigs and sometimes logs. The floras that are present in these and that are prone to fire are mainly the tree seedlings and few herbs. These herbs include *Pentanema indicum*, *Cyanthillium cinereum*, climbers like *Abrus precatorius* and tree seedlings like *Glochidion lanceolarium* etc. Green tree canopy with traces of termites, lichens were noted. The ground covered with dried leaves are sometimes associated with nesting of red ants, spider webs, etc. Within 15-20 cm inside the soil, insects were found. The layers of dried leaf litters and shrubs from a prolonged period of dry spell from October to May, no intermittent rains, the abnormal increased of heat from February to April and the dry hot winds creates a friction and aids as a catalyst to fire. consecutive pre-monsoon and monsoon and observed a huge difference on forest floor.

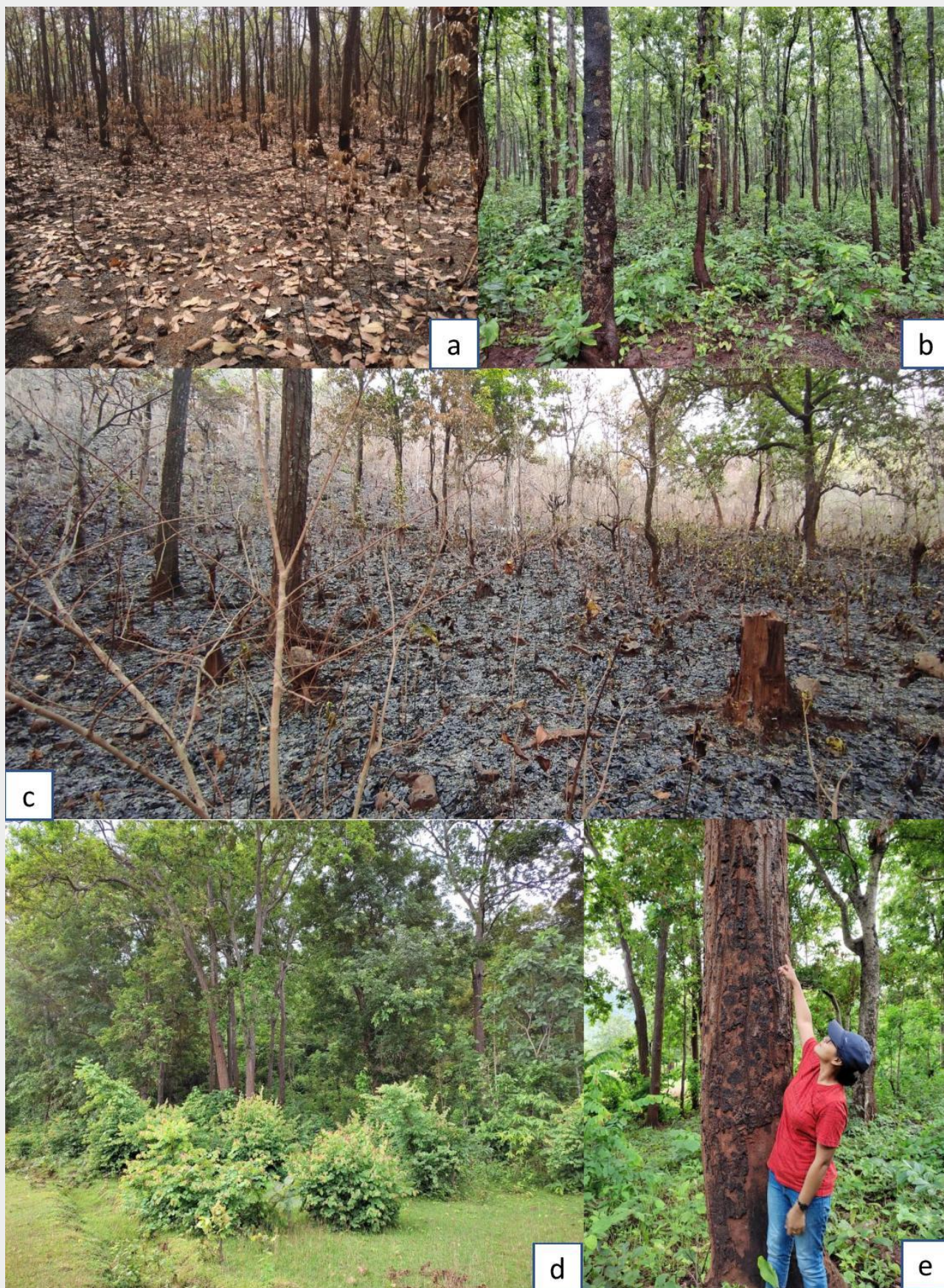
Comparison of the burnt areas after the forest fire and the consecutive monsoon



The bark of trees is normally burnt up to the height of 2 feet. In some cases, the bark was burnt till the height of 12-15 feet. Regenerations could be observed in some places where light shower of rain took place after the fire. And these burnt areas are recovered after monsoon. The picture shows how burnt leaves are still hanging along with recovered leaves in monsoon.



Survey during monsoon revealed that the forest floor was covered with green layer of regeneration of tree seedlings, shrubs, climbers, tuberous plants, herbs, etc. The burnt study areas were restudied after monsoon. Regenerations were noted and the most common tree seedlings in the study areas include *Shorea robusta*, *Azadirachta indica*, *Buchanania lanzan*, *Diospyros melanoxylon*, *Cassia fistula*, *Dalbergia latifolia*, *Symplocos racemosa* etc. The most common shrubs include *Woodfordia fruticosa*, *Glochidion lanceolarium*, *Grewia hirsuta*, *Olex scandens* etc. Common climbers in these areas include *Cissampelos pareira*, *Asparagus racemosa*, *Celastrus paniculata*, *Combretum roxburghii*, *Tinospora cordifolia*, *Cryptolepis buechananii*, *Ichnocarpus frutescens*, *Hemidesmus indicus*, *Dioscorea bulbifera*, *Dioscorea hispida*, *Dioscorea puber*, *Dioscorea wallichii* etc. Common herbs include *Andrographis paniculata*, *Elephantopus scaber*, *Curculigo orchioides*, *Polygala arvensis*, *Sida cordata*, *Typhonium* spp., *Curcuma* spp., etc. The regeneration observed with a sound floral diversity also comprises of many medicinally important species like *Scindapsus officinalis*, *Celastrus paniculata*, *Oroxylum indicum*, *Pterocarpus marsupium*, *Symplocos racemosa*, *Gloriosa superba*, etc. In many cases, important ground flora (ground orchids) like *Geodorum densiflorum*, *Geodorum laxiflorum* and many *Nervilia* spp. have been observed as regenerated flora of the burnt areas. During forest fire season, the soil of the forest floor is exposed with shedding of *Shorea robusta* flowers.



Remarkable difference of landscape after forest fire and after consecutive monsoon
a) & b) At Pahadpur area c) & d) Badajhili area e) Burnt bark till the height of 11 feet and the change observe in monsoon

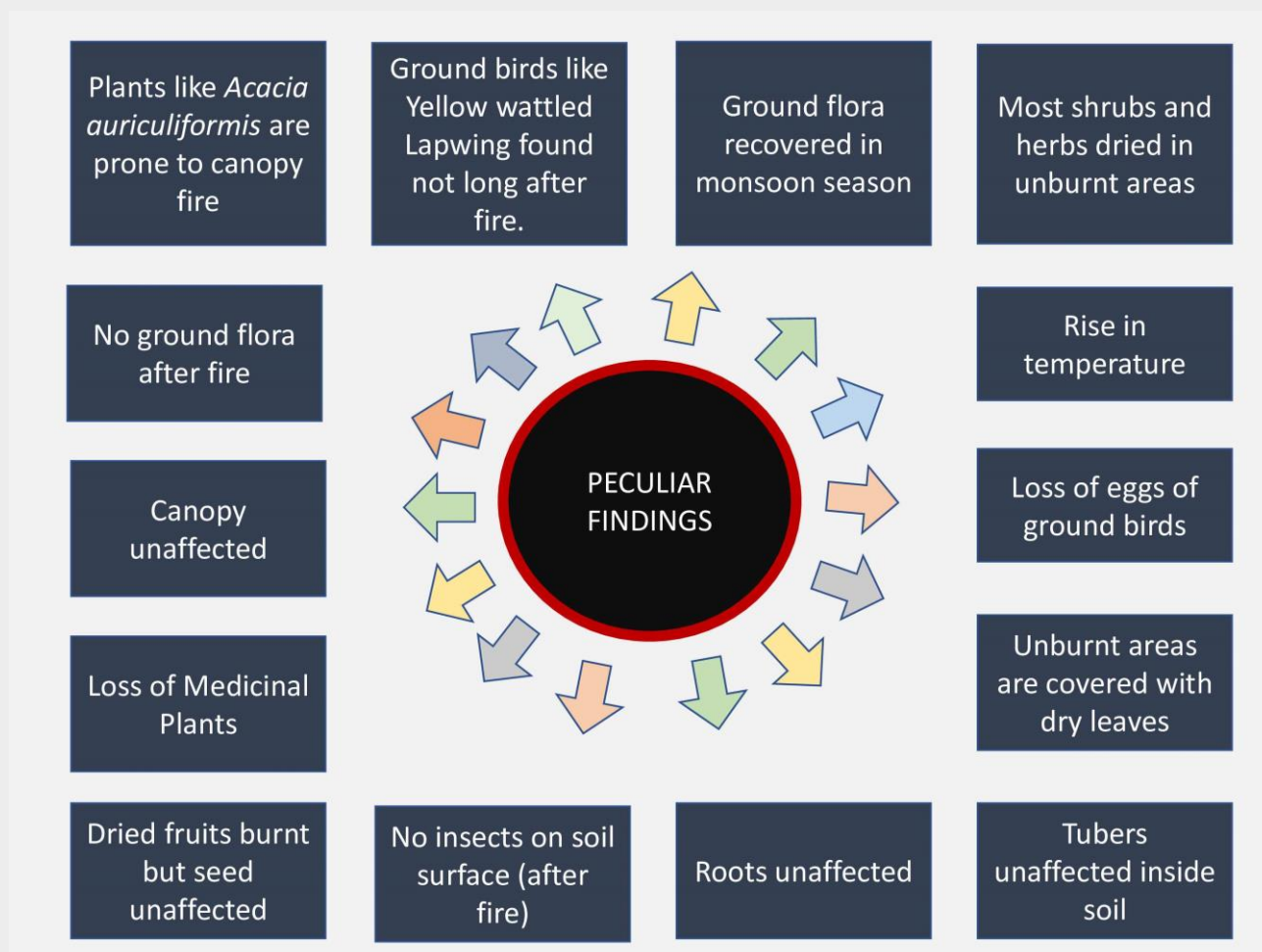


Figure 3: Some peculiar findings during the survey of forest fire in Rairangpur Forest Division

The comparative study of burnt and unburnt areas is given here. In burnt areas, the burnt parts include the dried leaves, tree seedlings, dried shrubs, herbs and bark of tree trunk up to 1-2 meter above ground. No ground flora and insects were observed in these areas. However, the tree canopy of the burnt areas was unaffected. Insects were observed inside the soil, roots were intact and were not affected by the fire. Bulbils of tuberous plant like *Dioscorea bulbifera* was found about 2-3 cm inside the soil. Dried fruits like *Cassia fistula* lying on the forest floor were found to be burnt but the seeds were unaffected. It was interesting to note that seedlings up

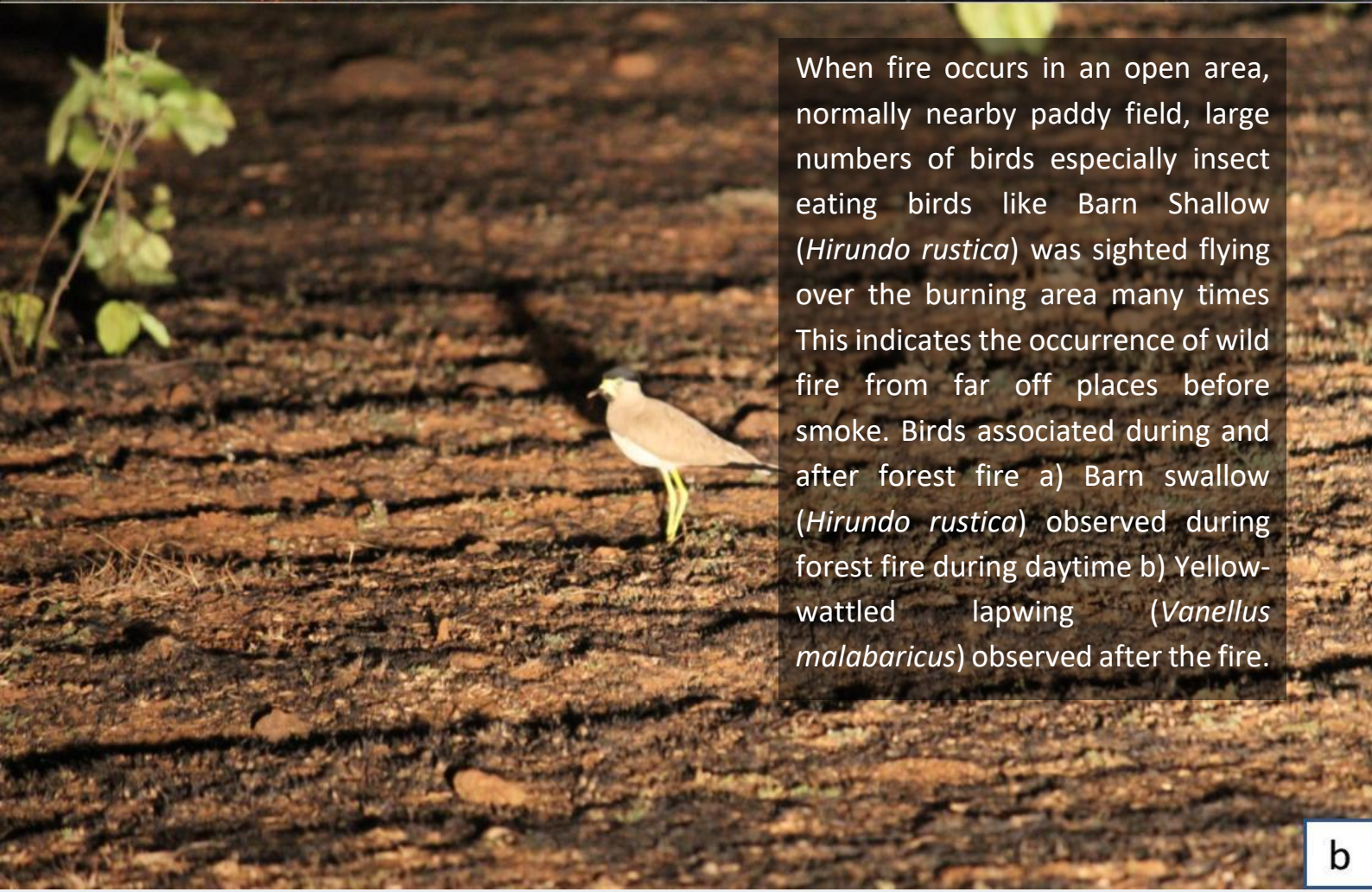
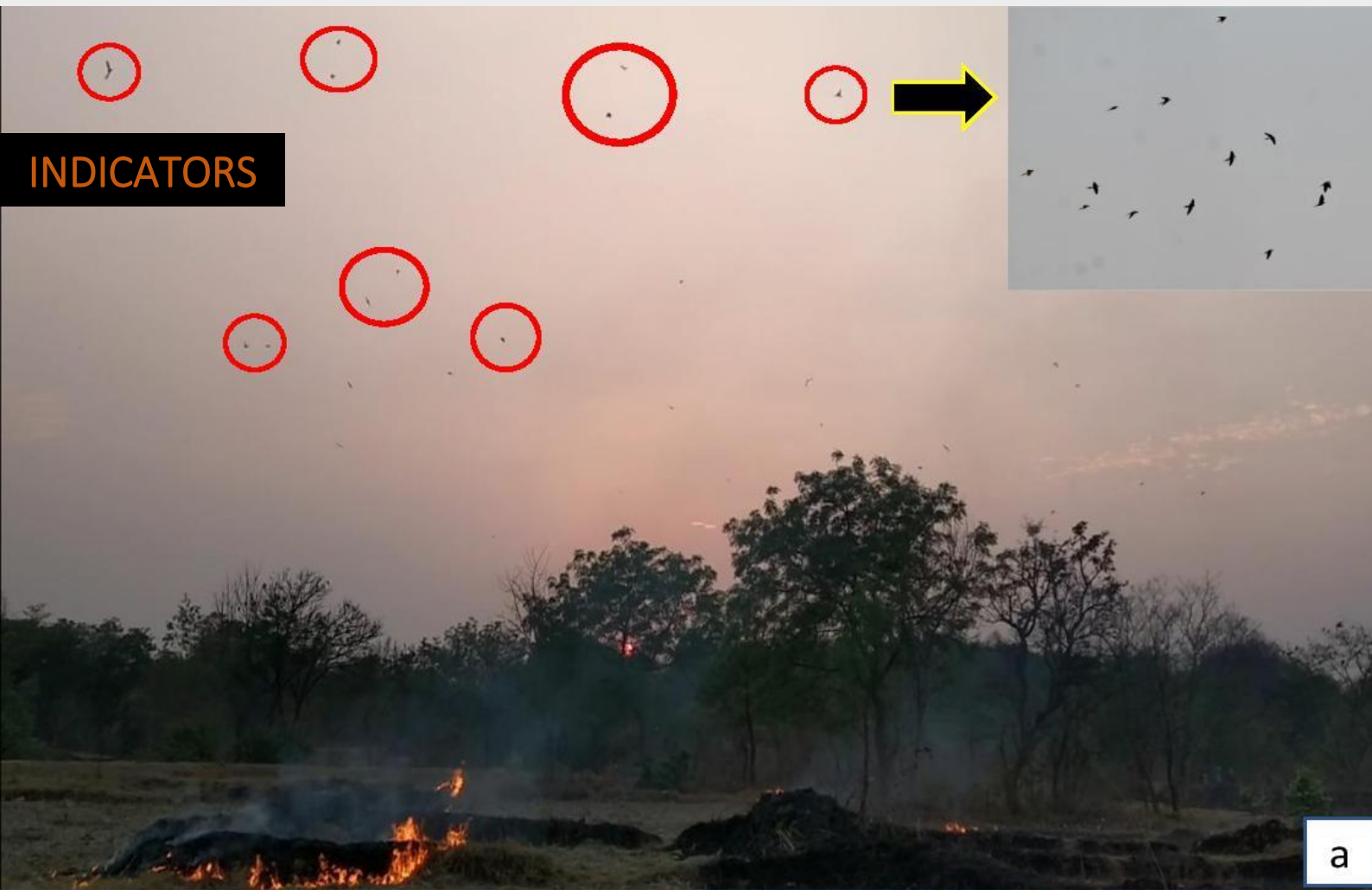
to the height of 2 feet generally of *Shorea robusta* were found to be totally burnt whereas seedlings on an average above 2 feet height generally *Glochidion lanceolarium* were not burnt totally but only the leaves of such height seedlings were burnt. The team surveyed many burnt areas just after the fire and the consecutive pre-monsoon & monsoon. It revealed that just after the fire, the forest floor was cleared from dry leaf litters, dried shrubs, few herbs, few tree seedlings, insects just up to the height of 2 feet. The stem of seedlings with generally more than 2-3 feet remain intake with the soil (Figure 3).

INTERACTIONS WITH THE LOCAL COMMUNITIES



The interview with local communities revealed many reasons for the cause of forest fire. Collection of Non-timber Forest Produces is the main reason for fire. Out of the various NTFPs, collection of flowers of *Madhuca longifolia* is the prime reason. Collection of other NTFPs like collecting leafy vegetables, flowers of *Dillenia pentagyna*, fruits of *Bauhinia vahlii*, fruits of *Ficus semicordata* are other reasons for the NTFP related forest fire. Other reasons include poaching for certain rituals, to make path easy to walk inside the forest, to get good quality of *Shorea robusta* and *Diospyros melanoxylon*, unattended fire with smoking, to kill poisonous insects like scorpions, snakes and to destroy its eggs. One of them mentioned that if the dry litters on the ground gets burnt, the light winter or early summer precipitation when comes gets in contact with the soil easily which thereby enhance the regeneration rate. This is then fed upon by herbivores.





When fire occurs in an open area, normally nearby paddy field, large numbers of birds especially insect eating birds like Barn Shallow (*Hirundo rustica*) was sighted flying over the burning area many times This indicates the occurrence of wild fire from far off places before smoke. Birds associated during and after forest fire a) Barn swallow (*Hirundo rustica*) observed during forest fire during daytime b) Yellow-wattled lapwing (*Vanellus malabaricus*) observed after the fire.

CURRENT STRENGTH OF FOREST FIRE MANAGEMENT

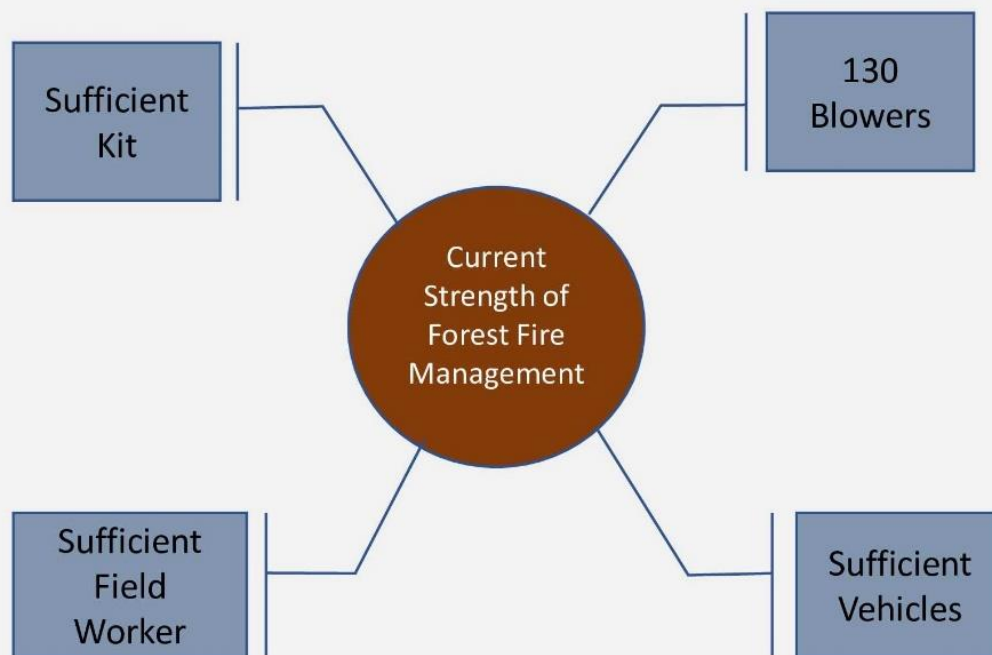


Figure 4: Strength of Rairangpur Forest Division for management of forest fire

Rairangpur Forest Division has been continuously taking many steps to reduce the forest fire in this division. The current strength of forest fire management of Rairangpur Forest Division includes 130 blowers,

sufficient field workers, sufficient vehicles, sufficient kit, etc. Fire lines are made as a preventive way to control spreading of forest fire (Figure 4).

BENEFITS OF FOREST FIRE IN STUDY AREAS AS PER THE LOCAL COMMUNITIES



Collection of vegetables and fruits from forest by local inhabitants during the forest fire season
a) Collection of leafy vegetables b) Collection of fruits of *Bauhinia vahlii* c) Hidden matchbox beneath the collected vegetables

BENEFITS OF FOREST FIRE IN STUDY AREAS AS PER THE LOCAL COMMUNITIES



Collection of fruits of Ficus semicordata during the forest fire season

BENEFITS OF FOREST FIRE IN STUDY AREAS AS PER THE LOCAL COMMUNITIES

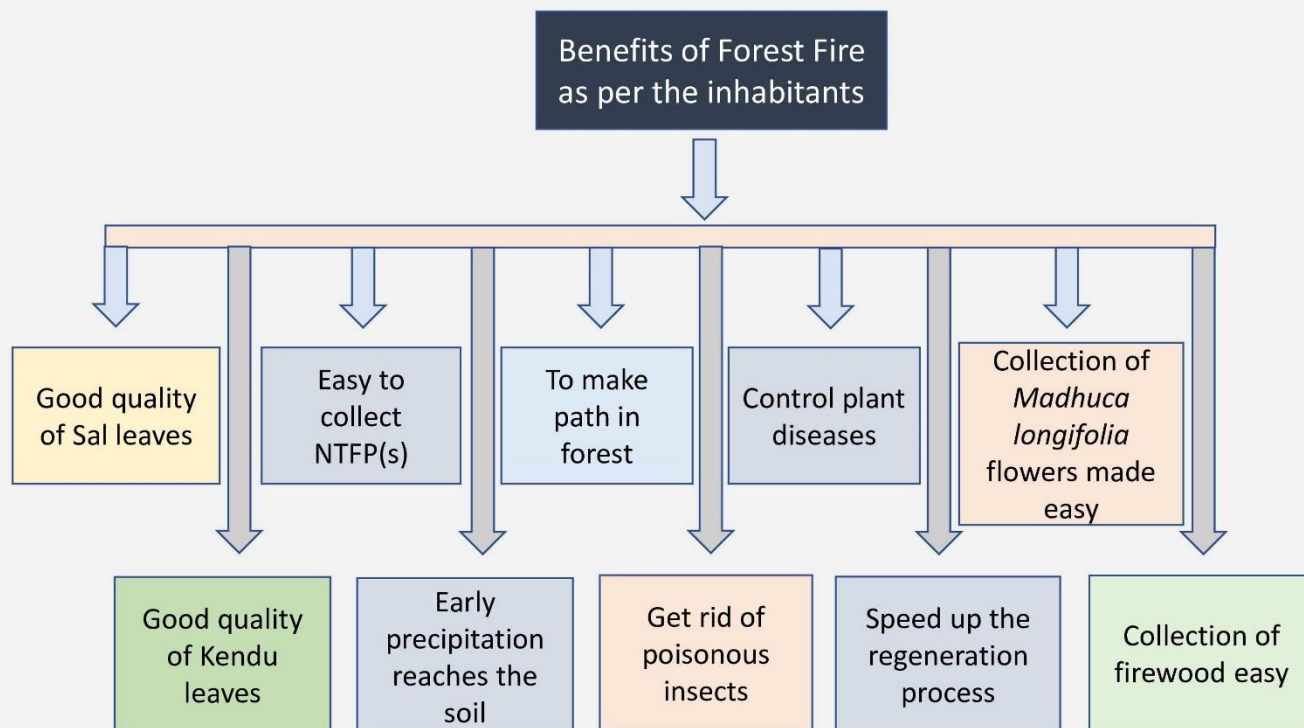


Figure 5: Benefits of forest fire as per the local inhabitants of forest

Forest fire makes local people in and around the forest easy to collect NTFPs like flowers of *Shorea robusta*, *Madhuca longifolia*, *Dillenia pentagyna*; fruits of *Diospyros melanoxylon*, *Pongamia pinnata*; seeds of *Bauhinia vahlii* and for firewood. Fire in open areas could be used for cultivation of vegetables and paddy. Burning allows water to reach the soil during light precipitation of winter and early summers which would otherwise be

soaked up by the dried litters. This again helps in regeneration and could provide food for herbivore. Fire could make path in the forest for walking otherwise the thick layer of leaf litters makes it difficult to walk and encounter poisonous insects and snakes. It could control the population of exotic species of plants too. It could also control plant diseases. It speeds up regeneration process by burning the dried fruit and seed coat (Figure 5).

LOSS OF FOREST FIRE IN STUDY AREAS AND IN GENERAL



a

a) Canopy burnt where there was *Acacia auriculiformis* was planted in mass during forest fire b) House burnt due to forest fire near *Acacia auriculiformis* plantation



b

LOSS OF FOREST FIRE IN STUDY AREAS AND IN GENERAL



Mass burning in villages in and around forest areas for the NTFP(s) collection.

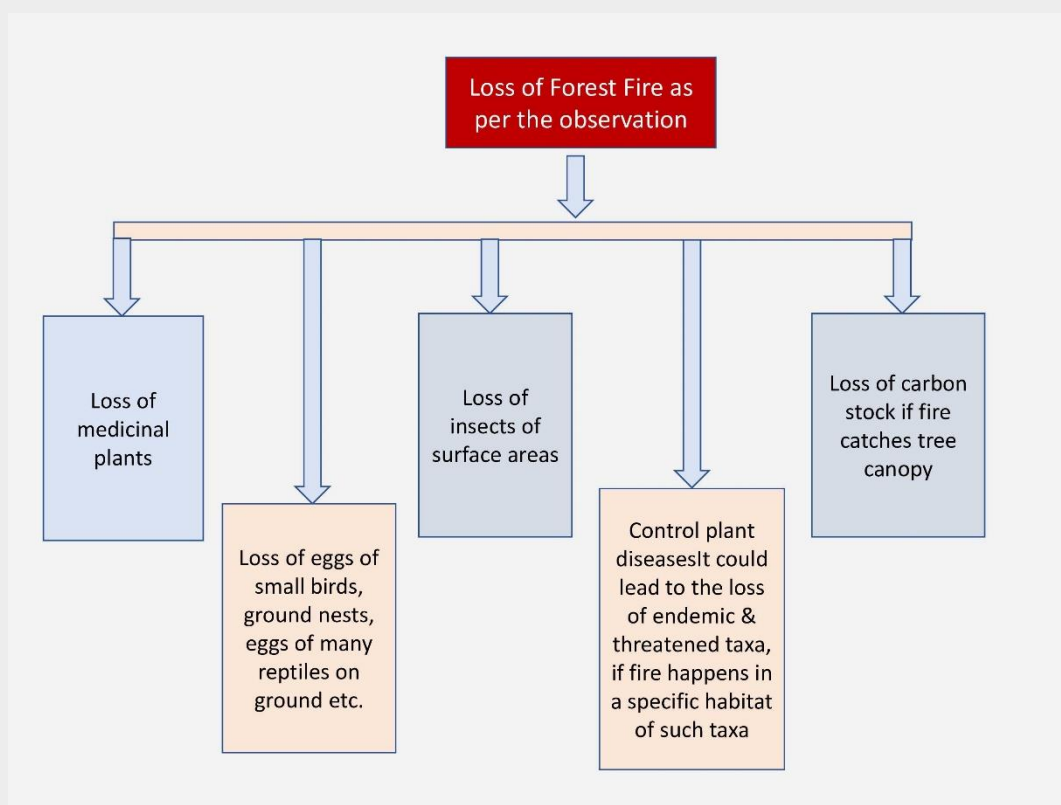


Figure 6: Some observations on the loss of forest fire in study areas

Forest fire releases greenhouse gases and smoke in air if burnt in large areas. This could rise the temperature of the atmosphere. If wild fire occurs near fire sensitive plants or plantation, it could spread fast and could cause many damages much more than any other time of wild fire in the areas. During the survey, the team visited an area where *Acacia auriculiformis* was planted in large numbers. The wild fire ignited around the *Acacia auriculiformis* plantation spread fast and destroy the house of nearby completely. The intensity of the heat was very high that all the household

materials were burnt to ashes and the aluminium utensils got melted. Other losses observed include Loss of medicinal plants which grow in summer; Loss of insects of surface areas; Loss of eggs of small birds, ground nests, eggs of many reptiles on ground etc.; Loss of different types of ants associated with dried leaves and surface of the forest; It could lead to the loss of endemic & threatened taxa, if fire happens in a specific habitat of such taxa; Loss of carbon stock if fire catches tree canopy (In a very small areas of Sana Jhili, the canopy fire observed under the study areas) (Figure 6).

SOME OBSERVATIONS DURING THE SURVEY OF FOREST FIRE



a



b

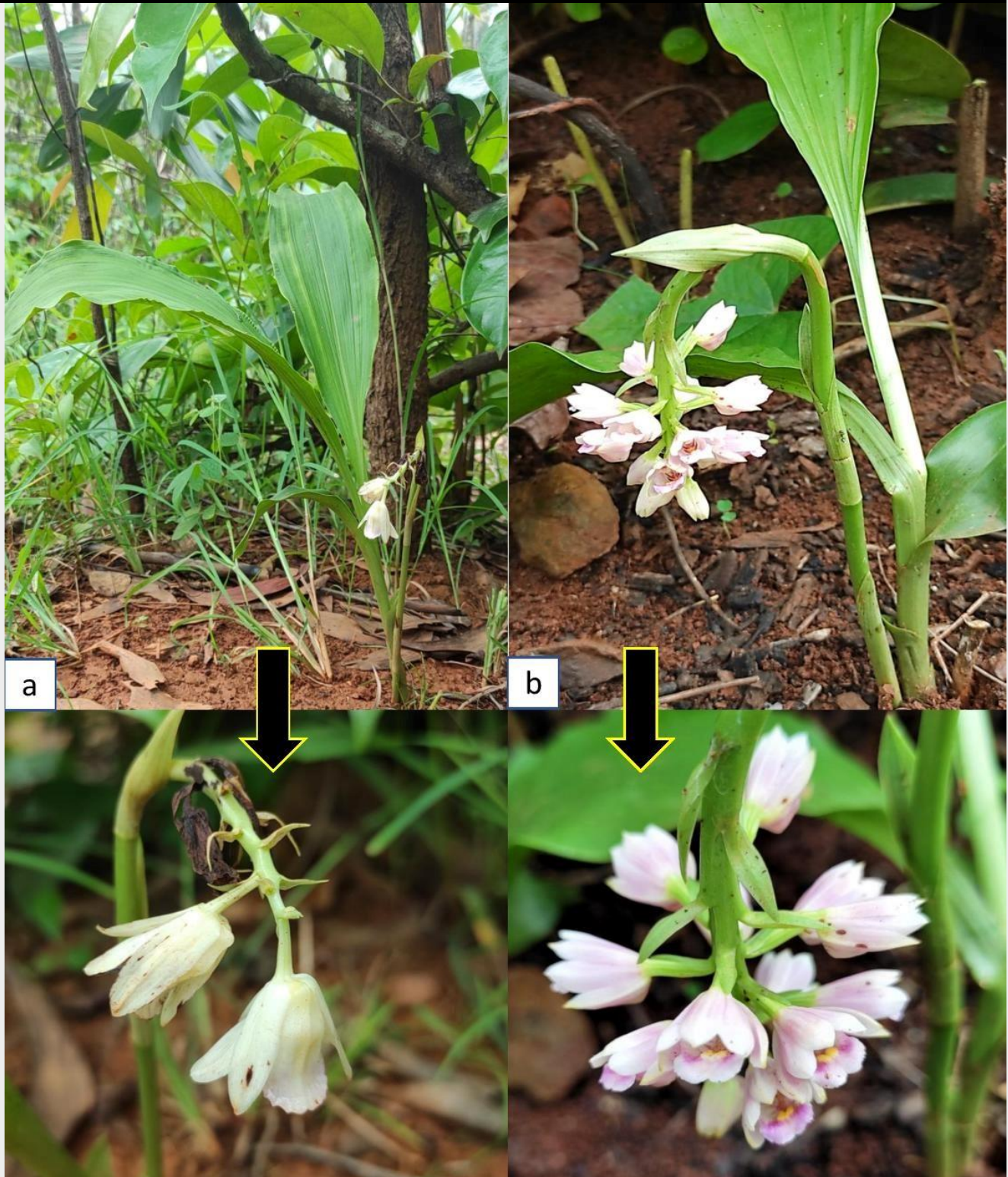
Observation of Forest fire impacting regeneration. a) Completely burnt ground flora during forest fire b) Good diversity and growth of regeneration after monsoon in the same area

SOME OBSERVATIONS DURING THE SURVEY OF FOREST FIRE



Observation after Forest Fire. a), d), e), f) & g) insects including worms, caterpillar, ants, spider, beetle b) Roots still intact with the soil c) bulbils of *Dioscorea bulbifera* h) & i) Partially burnt dried fruits with exposed seeds.

SOME OBSERVATIONS DURING THE SURVEY OF FOREST FIRE



Ground vegetation (orchid) of the burnt area (in forest fire) after monsoon a) *Geodorum laxiflorum*
b) *Geodorum densiflorum*

SOME OBSERVATIONS DURING THE SURVEY OF FOREST FIRE



Two different ground orchids (*Nervilia* spp.) observed in the burnt area (in forest fire) after monsoon

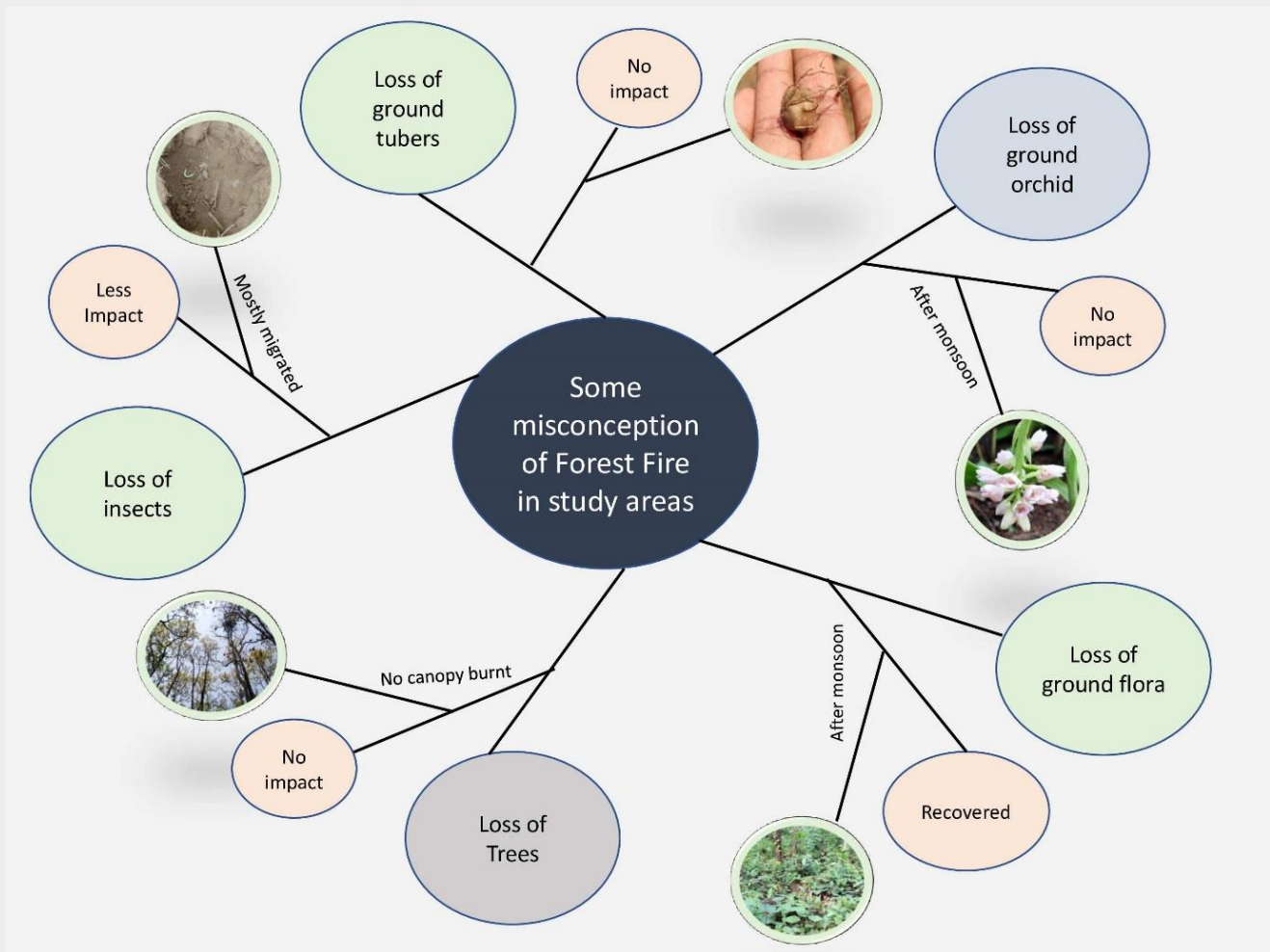


Figure 7: Common misconception on the loss of forest fire in study areas.

Many times, there have been the misconception on the loss and benefits of forest areas among the people in general. The survey revealed many ground level realities on the loss and benefits of forest fire. Firstly, forest fire in study areas is mainly surface fire where no roots are burnt and bark burnt to some extent could be easily recovered. Loss of ground flora including ground orchids or tuberous plants and tree

seedlings could be seen recovered with the arrival of monsoon. In some study sites, important ground flora (ground orchids) like *Geodorum densiflorum*, *Geodorum laxiflorum* and many *Nervilia* spp. have been observed as regenerated flora of the burnt areas. No canopy was burnt unless there is a mass plantation of *Acacia auriculiformis*. Surface insects are normally migrated or hidden inside soil (Figure 7).

STRATEGY OR MODEL FOR MANAGEMENT OF FOREST FIRE IN STUDY AREAS

In this model, the total budget for the management of forest fire is suggested to be divided into 5 different parts. Firstly, 20 % of the budget could be used for early burning at the end of December or at the beginning of January. Early controlled burning would help to reduce the dry litters which would otherwise be a fuel for the forest fire. Secondly, 50 % of the budget could be dedicated to the community related management of forest fire. In community related management, the budget could be further sub-divided into 5 parts i.e., 20 %, 30 %, 25 %, 15 %, 10 % for January, February, March, April and May respectively. The first 20 % would be given to the community or in the month of January and inform if there is no fire in the forest more amount that corresponds 30 % of the budget would be given in the next month. If this strategy gives a remarkable success, the remaining

budget for the respective months could be smoothly continued. However, if forest fire continued to pertain, the remaining budget allocated for further months could be used for other management activities. Thirdly, 20 % of the whole budget could be assign to make fire lines. Fire line or firebreak can be preventive way to control forest fire as it acts as a barrier to slow down or to stop the progressing wild fire by making a gap in vegetation. Fourthly, 5 % of the budget could be used for organizing awareness programmes for the inhabitants lying in and around the forest. Local NGOs could be involved for such activities. Lastly, 5 % of the budget should be assign for scientific documentation and research and development. This could be helpful for the analysis of the present strategy or further enhance the management strategy (Figure 8).

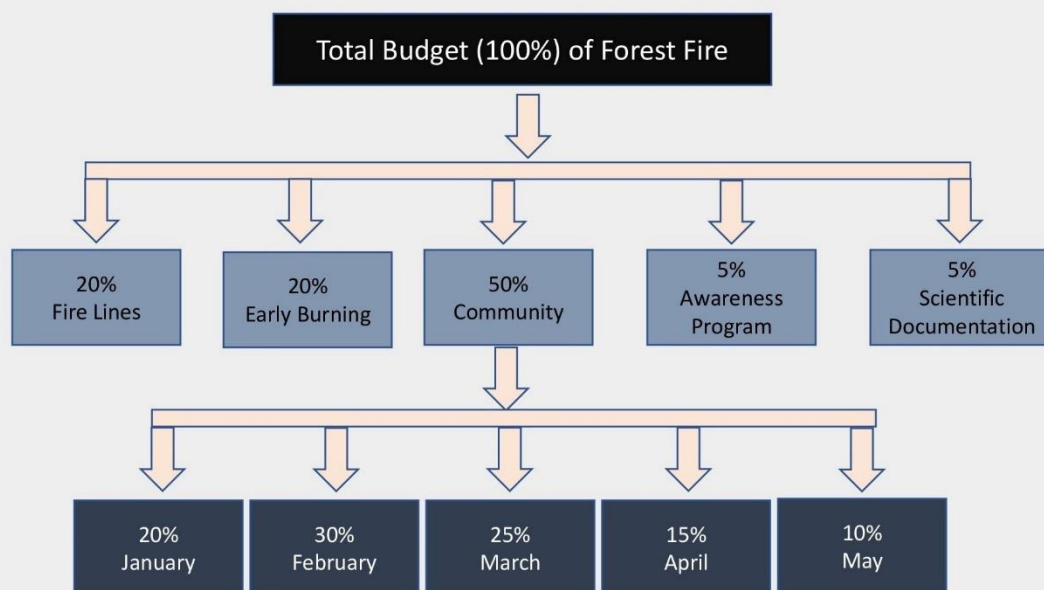


Figure 8: Budget distribution model for mitigation of forest fire in study areas

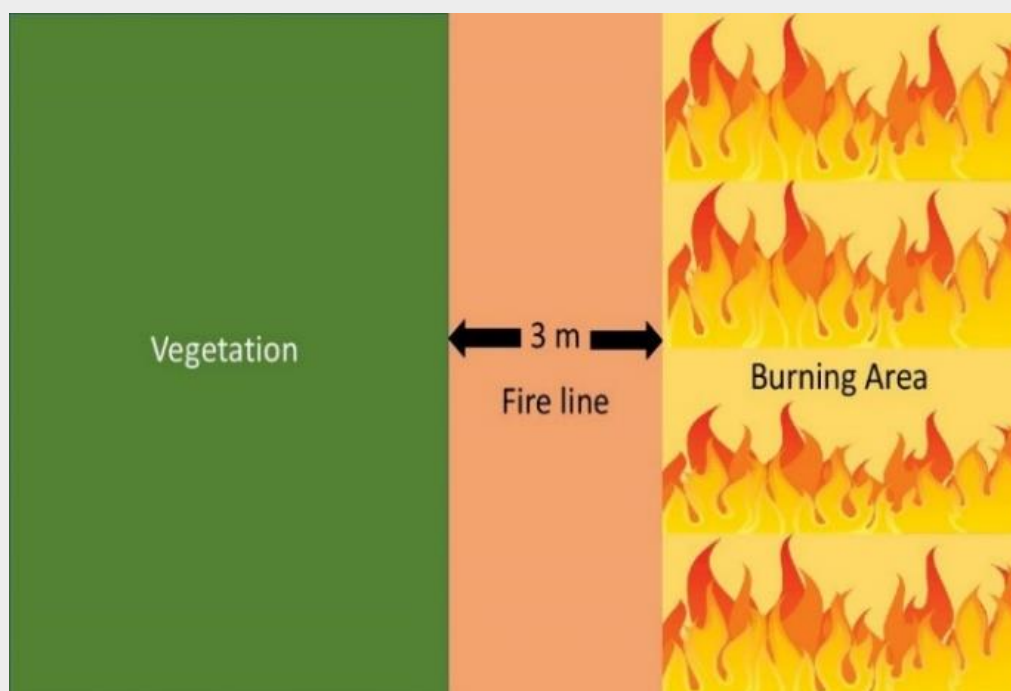


Figure 9: Fire line as a preventive way to stop spreading fire

RECOMMENDATIONS

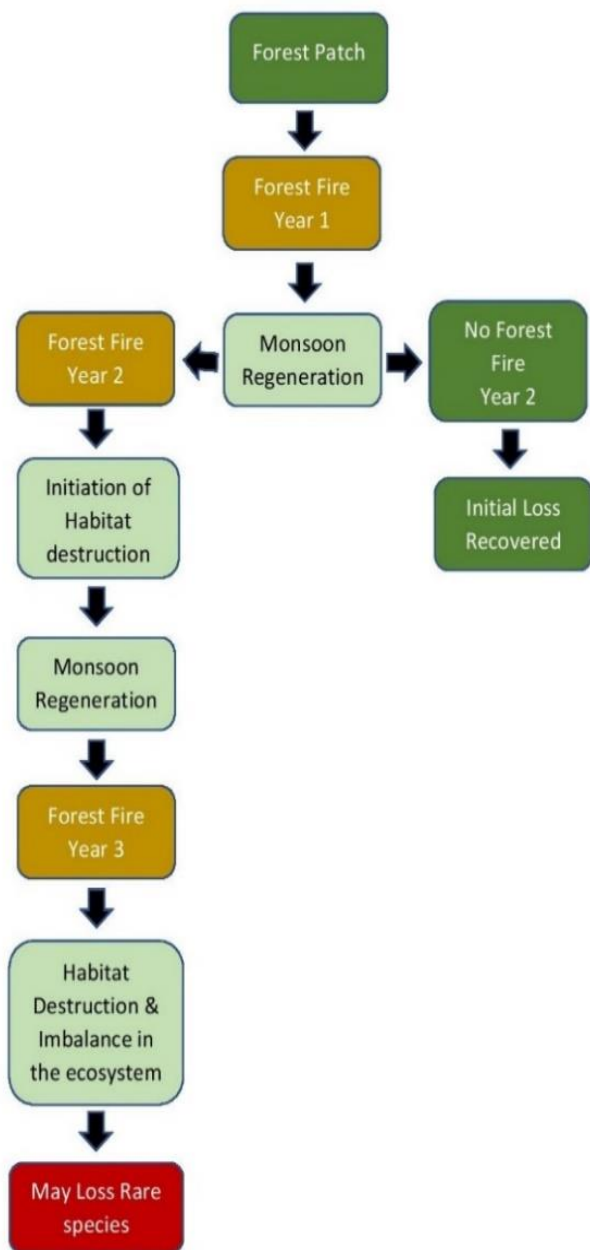


Figure 10: Representation of the probable consequence of consecutive forest fire

The basic observation made during the survey of forest fire revealed that

the fire occurrence in study area was surface fire where only the dried leaf litters or dried shrubs and herbs or some seedlings are mainly burnt inside forest areas and agricultural waste are burnt in open forested lands. As a preventive measure, fire line is made by forest officials to break the fire chain. Effective fire lines are those where vegetation is cleared with a minimum of 3 m apart (Figure 9).

Collection of NTFPs are inevitable for the local communities in and around the forest. Therefore, involvement of community related practices with a planned and controlled early burning is required to meet their necessities and implementing the strategy of budget distribution for community involved management of forest fire would be required.

The presence of insects above the burnt part of trees and inside the soil, the roots and bulbils unaffected, quick regeneration of ground flora, herbs, ground orchids revealed that the fire affected area might not be intense and can be quickly recovered by the consecutive monsoon. However, this could be a serious issue if the fire affected forest land is consecutively set on fire many times. Such practices could lead to habitat

loss of many species and a certain change in the ecosystem. This could be harmful and may sometimes be the cause of loss of rare or threatened

species which happen to be a part of this habitat (Figure 11). The probable consequence model has been illustrated in Figure 10.

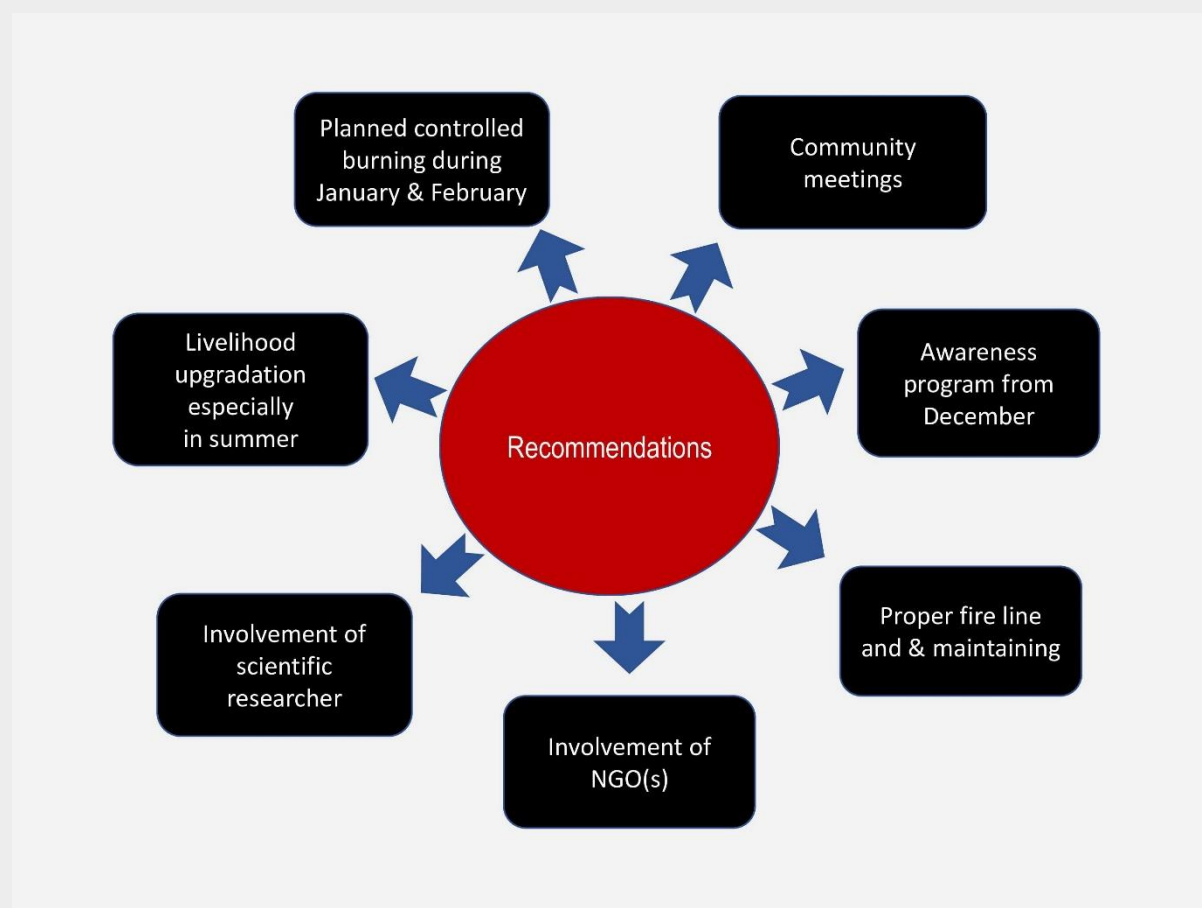


Figure 11: Some recommendations for the management and mitigation of forest fire in study areas



Team involving in extinguishing the forest fire



Team survey on the impacts of fire

TEAM ACTIVITIES



Interviewing the local inhabitants of study area

ANNEXURE I

Passport Data Form for Forest Fire (For Local Inhabitants)



AMBIKA PRASAD
RESEARCH FOUNDATION

Rairangpur Forest Division, Odisha

PDF FOR FOREST FIRE

Date:

Location:

Range:

Geographical Location:

Name of Informant:

Occupation:

Age:

Collector name:

1. Do you visit the nearby forest areas? Yes ☐ No ☐

If Yes, Why ?

2. What do you collect from forest?

Vegetables ☐ Fruits ☐ Flowers ☐ Roots ☐ Barks ☐

Firewood ☐ Seeds ☐ Honey ☐

Others:

3. Do you sell the products? Yes ☐ No ☐

If yes, what is the average cost?

4. In which season do you go in the forest for collection? How frequent?

5. Do you carry dogs with you. Yes ☐ No ☐

If Yes. Why?

6. In dry season, how do you manage to walk in the forest? There is a thick layer of dry leaves in forest.

7. How do you find ways away from snakes, scorpions, etc.?

Passport Data Form for Forest Fire (For Local Inhabitants)



AMBIKA PRASAD
RESEARCH FOUNDATION

Rairangpur Forest Division, Odisha

8. Is fire in forest good or Bad. Good ☐ Bad ☐

If Yes. Why?

If No. Why?

9. What do you do when you see fire in the forest?

10. What do you do when you see fire near your house?

11. Are you scared of fire near your house. Yes ☐ No ☐

12. Is there any traditional practices related to fire. How is it done?

13. Do you do the traditional hunting ?

14. When you do the traditional hunting and how ?

15. For performing any rituals regarding hunting, you make fire ?

16. Does Forest department help you. In what ways.

Passport Data Form for Forest Fire (For Local Inhabitants)



AMBIKA PRASAD
RESEARCH FOUNDATION

Rairangpur Forest Division, Odisha

Other Information:

Signature of Informant

Signature of Collector

ANNEXURE II

Passport Data Form (For Forest Officials)



AMBIKA PRASAD
RESEARCH FOUNDATION

Rairangpur Forest Division, Odisha

PDF FOR FOREST FIRE
(For Forest Officials)

Date: _____ Location: _____
Range: _____ Geographical Location: _____
Name of Informant: _____
Position: _____
Age: _____ Collector name: _____

1. Since when have you been working here?
2. When was the latest forest fire you had seen and where?
3. Compared to previous year, forest fire this year has increased or decreased.
4. Which season forest fire happens?
5. What do you think forest fire is good or bad?

6. Have you seen/know any rituals related to fire in forest?
If yes. What, when and where is it done?

Passport Data Form (For Forest Officials)



AMBIKA PRASAD
RESEARCH FOUNDATION

Rairangpur Forest Division, Odisha

7. Have you seen any local/ tribal people collecting forest produce from forest?

If Yes. What?

8. Have you seen any tribal people hunting in forest?

If Yes. What?

9. How do know (sources) where the fire has happened?

10. What is your first step when there is forest fire in a region?

Passport Data Form (For Forest Officials)



AMBIKA PRASAD
RESEARCH FOUNDATION

Rairangpur Forest Division, Odisha

11. How many manpower usually goes to extinguish the fire?

12. What equipment's do you carry with you? How many equipment do you have?

13. What strategy you follow to extinguish the fire of the place?
(Step by step)

14. How do you extinguish large area fire and small area fire?

15. Do blower used or water used for extinguishing?

16. Advantages of Blower:

Passport Data Form (For Forest Officials)



AMBIKA PRASAD
RESEARCH FOUNDATION

Rairangpur Forest Division, Odisha

17. Disadvantages of Blower:

18. How much fuel is needed for Blower

19. Advantages of Water:

20. Disadvantages of Water:

21. What according to you is or should be the best equipment for fire extinguishing?

21. Did you try to ask the villagers/ or create awareness about forest fire.

If yes. Do you think they listen to you?

22. What according to you is the main reason for forest fire?

Passport Data Form (For Forest Officials)



AMBIKA PRASAD
RESEARCH FOUNDATION

Rairangpur Forest Division, Odisha

23. What according to you is the main reason for villagers to lit forest fire?

24. Do you know Fire Line. If Yes. How is it made? What do you think is the standard size of Fire line?

Other Information

Signature of Informant

Signature of Collector

REFERENCES

- Technical Information Series 1 Vol I. (2019). Forest Survey of India, Ministry of Environment, Forest and Climate, Forest and Climate Change, Government of India.
- Strengthening forest fire management in India. (2018). Ministry of Environment, Forest and Climate Change, Government of India.
- Sikkim Forest Fire (2009). 14-Chapter-STUDY OF FOREST FIRES IN SIKKIM HIMALAYAS, INDIA USING.pdf (sikkimforest.gov.in)
- Forest Fire Management Global Best Practices. (2020). National Disaster Management, New Delhi.
- Addis Ababa. Forest / Bush / Fire Management Guideline. (2020). World Vision Ethiopia.
- India State Forest Report (2019). Odisha.
- National Action Plan on Forest Fire, Forest Protection Division, Ministry of Environment, Forest and Climate Change. Government of India.
- Nasi R, Dennis R, Meijaard E, Applegate G and Moore P. (2002). Forest Fire and Biological Diversity. 209(53): 36-40.



CONTACT DETAILS

Ambika Prasad Research Foundation
5F/561, CDA Sec 9, Cuttack, Odisha
Email id: sanjeet.biotech@gmail.com
www.aprf.co.in