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A STUDY ON WILDFIRE AND ITS HAZARDOUS EFFECTS ON OUR ENVIRONMENT

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ABSTRACT:

A wildfire is an unplanned fire that burns in a natural area such as a forest, grassland, or prairie. Wildfires are often caused by human activity or a natural phenomenon such as lightning, and they can happen at any time or anywhere. In 50% of wildfires recorded, it is not known how they started. The risk of wildfires increases in extremely dry conditions, such as drought, and during high winds. Wildfires can disrupt transportation, communications, power and gas services, and water supply. They also lead to a deterioration of the air quality, and loss of property, crops, resources, animals and people. Wildfires and volcanic activities affected 6.2 million people between 1998-2017 with 2400 attributable deaths worldwide from suffocation, injuries, and burns, but the size and frequency of wildfires are growing due to climate change. Hotter and drier conditions are drying out ecosystems and increasing the risk of wildfires. Wildfires also

simultaneously impact weather and the climate by releasing large quantities of carbon dioxide, carbon monoxide and fine particulate matter into the atmosphere. Resulting air pollution can cause a range of health issues, including respiratory and cardiovascular problems. Another significant health effect of wildfires is on mental health and psychosocial well-being. This study pulls together the project aims, discusses the sources reviewed, presents a study on the environmental impact of fire, describes the gaps in knowledge, and presents a plan forward.

KEYWORDS: Forest Fire, Biodiversity, Soil physicochemical properties, Microbial population

INTRODUCTION:

Fire has long been an integral part of the forest environment and has played an important role in shaping the flora and fauna. A fire may be either beneficial or detrimental to individuals of a particular species but the effect of a single fire is not as environmentally significant as a change to the fire regime. The social, economic and ecological cost of fires has demonstrated that the resources many governments have to respond to forest fires are often overwhelmed. A UN mission report on forest fires concluded that the blazes had "an important international dimension in relation to severe, transboundary air pollution, and the large-scale destruction of the unique aspects of the existing biodiversity which represents a world heritage. In Indian context according to a study, during the Sixth Five-Year Plan 1980-85) 17852 fires were reported, affecting an area of 5.7 million ha, or an annual average of some 1.14 million ha. Inventories conducted by the Forest Survey of India show that on average 55% of forest area in India is affected by fire and 78 percent by grazing. Subsequently, little regeneration occurs in 72 percent of forested areas Ministry of Environment and Forest, 1997. The annual losses from forest fires in India for the entire country have been moderately estimated at Rs 440 crores. This estimate does not include the loss suffered in the form of biodiversity, nutrient and soil moisture and other intangible benefits. India witnessed the most severe forest fires during the summer of 1995 in the hills of Uttaranchal and Himachal Pradesh in north west Himalaya. An area of 677,700 ha was affected by fires. The quantifiable timber loss was around Rs. 17.50 crores. In the present study fire is studied as an agent of transformation which affects biotic and abiotic components of the ecosystem and thus altering productive, protective function of a forest. This is highlighted in the ecosystem fragmentation, alteration in ecosystem structure and function, biodiversity status of an

area. An attempt is made to study the short and long term effect of fire on biodiversity status. The study area is characterized by hilly and mountainous terrain supporting varied forest types and composition controlled by altitude, land use/land cover types along with perpetual snow cover on the mountain peaks. Variation in altitude is quite appreciable ranging from about 549m to 3750m. There are no perpetually snow-covered areas in this range. The area under forest cover represents 56.14% out of its total geographical area. Pine is the dominant forest type followed by oak, oak mixed and deciduous. Pine is most susceptible to fire almost every year particularly near habitation/agricultural patches. The main objective of the investigation is to understand the role of fire in shaping ecosystem with emphasis on long and short term impact of fire, main stress on biodiversity by fire and other biotic or abiotic factors in combination with fire which cause biodiversity loss. Considerable progress is attainable, but requires collaboration between ecologists and forest managers. Section 33 in The Indian Forest Act, 1927- Penalties for acts in contravention of notification under section 30 or of rules under section 32. (1) Any person who commits any of the following offenses, namely, d) sets fire to such forest, or kindles a fire without taking all reasonable precautions to prevent its spreading to any tree reserved under section 30, whether standing fallen or felled, or to say closed portion of such forest; (d) sets fire to such forest, or kindles a fire without taking all reasonable precautions to prevent its spreading to any tree reserved under section 30, whether standing fallen or felled, or to say closed portion of such forest punishes those who commit an arson or also negligence, The objectives of this study are, To evaluate the contribution of forest fires in environment pollution, To contemplate the causes behind wildfire occurrence, Gathering public awareness on sec-33 of the Indian forest Act -1927, Analyzing ways to prevent forest fires and To understand public knowledge on wildfire. The method of research conducted in this survey is a descriptive method of research, and the sampling has been collected through a convenient method of collection, and the samples have been collected offline, the total amount of samples collected was 200 responses. The independent variables present in this survey are Gender, Age, Marital Status, and Occupation. This shall also comprise Bar charts, Pie charts, Chi-Square and a test for the analysis and shall be enclosed with a discussion of the same. India's commitment to sustainable development is clearly demonstrated through its innovative and progressive forest policies. The Government's policy of incentivising state governments to improve their forest cover is evident in the 14th Finance Commission's allocation of 7.5% of total revenues on the basis of the state's forest

cover. This makes India the implementer of the world's largest Payment for Environmental Services scheme. Over the last few years, the forest and tree cover in the country has been steadily increasing, and at present, it stands at 24.16% of the total geographic area. This affirms that sustainable forest management and long-term thinking about natural assets are foundations for strong and sustained growth. This is not to say that there are no challenges. Forest fires are a leading cause of forest degradation in India, and the current pattern of widespread and frequent fires could make it more difficult for India to meet its long-term goal of bringing 33% of its geographical area under forest & tree cover and to achieve its international commitment to create additional carbon sinks of 2.5 billion to 3 billion tons worth of CO₂ equivalent by 2030. Recognizing the challenge of forest fires in India, the Ministry of Environment, Forest and Climate Change and the World Bank co-organized an international workshop on Forest Fire Prevention and Management from November 2017. The discussion benefitted from the perspectives of government officials from India, researchers, experts and representatives from Australia, Belarus, Canada, Mexico, Nepal, the United States of America, and the Food and Agriculture Organization of the United Nations. This workshop served as an opportunity for knowledge exchange to help India devise a robust strategy to tackle the challenge of forest fires. It was also an opportunity for Indian states to share good practices with each other, and with countries from around the world, and to learn from other countries. Forest fire can threaten lives and property. Developing institutional mechanisms to improve coordination among various players is a key ingredient for effective management. Forest fires will continue to be managed primarily by state forest departments, but will also need to be a part of disaster planning and the forest department needs to be involved in this process. Because other agencies, such as local police, fire departments and disaster management agencies, may be called in case of large fires, it is important that they are trained in forest fire suppression methods. Moreover, joint trainings should be organized to coordinate between these departments. In India, local people who depend on forests for their livelihood and to supplement their incomes are the ones who often set fires in the forests. In many cases, they use fire as a tool to obtain the goods and services on which they rely, for example, by burning ground cover to get a fresh flush of grass for consumption by their livestock. Local community members are also the ones who are called to help respond to fires when they spread and burn out of control. While much is already being done at the grassroots level by the forest departments to raise awareness about the impacts of forest fires among local

people, increasing the effectiveness of this engagement and encouraging changes in the way people use fire will require providing the right incentives, guided by the overall aim of enhancing the services provided by healthy forests to communities. At the same time, it is necessary to have comprehensive information on forest fires in India. Forest Fire Information Systems have a role to play in prevention, detection, suppression, and recovery, that is, across the spectrum of needed interventions.

AIM : To gather public perception on the causes and methods to curb forest fires.

OBJECTIVES:

- To evaluate the contribution of forest fires in environmental pollution .
- To contemplate the causes behind wildfire occurrence.
- Gathering public awareness on sec-33 of the Indian forest Act – 1927
- Analyzing ways to prevent forest fires.
- To understand public knowledge on wildfire.

LITERATURE REVIEW:

David L. Peterson (2020), Changing wildfire, changing forests: the effects of climate change on fire regimes and vegetation in the Pacific Northwest, USA ,Resource managers will likely be unable to affect the total area burned by fire, as this trend is driven strongly by climate. However, fuel treatments, when implemented in a spatially strategic manner, can help to decrease fire intensity and severity and improve forest resilience to fire, insects, and drought. Where fuel treatments are less effective (wetter, high-elevation, and coastal forests), managers may consider implementing fuel breaks around high-value resources. When and where post-fire planting is an option, planting different genetic stock than has been used in the past may increase seedling survival. Planting seedlings on cooler, wetter microsites may also help to increase survival. In the driest topographic locations, managers may need to consider where they will try to forestall change and where they will allow conversions to vegetation other than what is currently dominant.**Anita K(2009)**,Forest fire in India: A review of the knowledge base, Forest fire has profound impacts on atmospheric chemistry, biogeochemical cycling and ecosystem structure.

This feedback interaction may be hastened in climate change scenarios. In view of this, the present day knowledge about the forest fire condition in India has been reviewed. Operational monitoring, geospatial modeling and climate change uncertainties are discussed. Indicators for forest fire assessment and the role of geoinformatics tools in developing those parameters are identified. The need for developing an adaptive management strategy from the existing experience is emphasized, and specific points are recommended sector-wise with short- and long-term visions.

George Humberto Ambarim(2011), Forest fires research: beyond burnt area statistics, During the last few years extreme fire occurrences in distant parts of the globe such as Australia, Russia and United States of America (USA) have increased global awareness and concern about the destructive power and profound consequences of forest fires. The complexity and extent of the impacts of forest fires, however, go far beyond the statistics provided by official reports and media on, for example, total burnt area, number of destroyed houses, or human casualties. The World Health Organization (WHO, 2007) has identified forest fires, and particularly those occurring close to urban areas, as one of the major threats to public health security in the 21st century, stressing the need for politicians, experts and stakeholders to recognize the magnitude and multidimensionality of the impacts of forest fires and the resulting risks. The WHO has also warned that effective measures of risk and crisis management are urgently needed. Intended to promote a more interdisciplinary approach to the multiple and interrelated factors influencing and potentiating the occurrence, severity and impacts of forest fires, the Centre for Environmental and Marine Studies (CESAM) organized an International Workshop entitled “Forest fires research - beyond burnt area statistics”. On May 26 2010 at the University of Aveiro, it brought together a variety of experts, professionals and students from Portugal, Spain and the USA. This booklet aims to share the main contents of the presentations that were given by national and international scientists during the workshop. It is organized according to four different stages in relation to the occurrence of forest fires: before, during, after and under future conditions. The different chapters address a wide range of distinct but clearly interrelated research topics, namely: fire prevention; fuel management; fire behavior and suppression; smoke emissions, air pollution and human exposure; ecosystem functioning and biodiversity; hydrology and soil erosion; ecological restoration; ecotoxicology; socio-economic factors; and climate change impacts.

Sas Biswas(2019), The impact of forest fire on forest biodiversity in the Indian Himalayas~UTTARANCHAL, Frequent fires in the Himalayan region

of Uttaranchal in the Indian Himalayas have been blamed for forest deterioration. It is true that frequent fires on large scales cause air pollution, mar quality of stream water, threaten biodiversity and spoil the aesthetics of an area, but fire plays an important role in forest ecosystem dynamics. Moreover, it is not fire, but other anthropogenic activities plus fire that are degrading the forest of the Indian Himalayas. In the present study the role of fire in shaping forest structure and composition is analyzed. If fire is managed wisely it can be used as the cheapest means of forest management. For this purpose different fire characteristics are assessed together with their interrelationship with forest flora. **Jianbang Gan(2016)**, Special Issue "Climate Change and Forest Fire", Forest fire, though an integrative part of forest ecosystems, has become an increasing threat to ecosystems, properties and even human lives due to human influences and other forces. Climate change is likely to alter forest fire regimes, engendering a better understanding of its impact on forest fire activity and the development of mitigation and adaptation strategies. This Special Issue focuses on broad aspects of forest fire coupled with climate change, urbanization, and other forcing that has broad regional and global implications. Manuscripts based on field studies and/or modeling from around the world are welcome. This Special Issue is intended to assemble a unique collection of the latest research and review papers that address ecological, socioeconomic and/or policy aspects of forest fire and its mitigation and adaptation options, and to advance our knowledge in these arenas. **Sarah Moura Batista dos Santos(2014)**, Research on Wildfires and Remote Sensing in the Last Three Decades: A Bibliometric Analysis Evaluating the impact of wildland fires on landscapes, a pursuit increasingly supported by remote sensing techniques, requires an understanding of wildfire dynamics. This research highlights the main insights from the literature related to "wildfires" and "remote sensing" published between 1991 and 2020. The Scopus database was used as a source of information regarding scientific production on these topics, after which bibliometric tools were employed as a means through which to reveal patterns in this network of journals, terms, countries, and authors. The results suggest that these subject areas have undergone significant developments in the last three decades, having been the focus of growing interest among the scientific community. The most relevant contributions to the literature available have been made by researchers working in the areas of earth and environmental sciences 54% of the publications, primarily in the United States, China, Spain, and Canada. Research trends in this field have undergone a significant evolution in recent decades, explained by the strong relationship between

the technological evolution of detection methods and remote sensing data acquisition. **A.PARK Williams (2021)**, Impact of anthropogenic climate change on wildfire across western US forests, Increased forest fire activity across the western continental United States (US) in recent decades has likely been enabled by a number of factors, including the legacy of fire suppression and human settlement, natural climate variability, and human-caused climate change. We use modeled climate projections to estimate the contribution of anthropogenic climate change to observed increases in eight fuel aridity metrics and forest fire area across the western United States. Anthropogenic increases in temperature and vapor pressure deficit significantly enhanced fuel aridity across western US forests over the past several decades and, during 2000–2015, contributed to 75% more forested area experiencing high fire-season fuel aridity and an average of nine additional days per year of high fire potential. Anthropogenic climate change accounted for ~55% of observed increases in fuel aridity from 1979 to 2015 across western US forests, highlighting both anthropogenic climate change and natural climate variability as important contributors to increased wildfire potential in recent decades. We estimate that human-caused climate change contributed to an additional 4.2 million ha of forest fire area during 1984–2015, nearly doubling the forest fire areas expected in its absence. Natural climate variability will continue to alternate between modulating and compounding anthropogenic increases in fuel aridity, but anthropogenic climate change has emerged as a driver of increased forest fire activity and should continue to do so while fuels are not limiting. **Yang Shu (2012)**, Influence of Climatic Factors on Lightning Fires in the Primeval Forest Region of the Northern Daxing'an Mountains, China Forest fires lead to permafrost degradation and localized drought, and regional droughts increase the probability of forest fires, leading to a positive feedback loop between climate change and fires. However, the relationship between fire occurrence and climatic factors change is unclear for boreal forests, which represent the largest land-based biome and stock of carbon. Here, we analyzed the relationship between lightning fire occurrence and meteorological and topographic factors based on the fire frequency, burned area, and meteorological data from the primeval forest region of the northern Da Xing'an Mountains in China. We found that lightning fires occurred most frequently at an altitude of 600 to 700 m. From 1999 to 2019, the frequency of lightning fires showed an overall upward trend, whereas the affected area had no obvious change. It can be attributed to fire suppression efforts and greatly increased investment in fire prevention in China. Snow cover had a strong regulatory effect on the start and end dates of

lightning fires for the seasonal cycle. The frequency of lightning fires was positively correlated with the average temperature, maximum temperature, and surface evaporation and negatively correlated with precipitation and surface soil moisture (0–10 cm). The result will be useful in the spatial assessment of fire risk, the planning and coordination of regional efforts to identify areas at greatest risk, and in designing long-term lightning fires management strategies.

Christopher J. Shultz (2017) ,Spatial, Temporal and Electrical Characteristics of Lightning in Reported Lightning-Initiated Wildfire Events, Analysis was performed to determine whether a lightning flash could be associated with every reported lightning-initiated wildfire that grew to at least 4 km². In total, 905 lightning-initiated wildfires within the Continental United States (CONUS) between 2012 and 2015 were analyzed. Fixed and fire radius search methods showed that 81–88% of wildfires had a corresponding lightning flash within a 14 day period prior to the report date. The two methods showed that 52–60% of lightning-initiated wildfires were reported on the same day as the closest lightning flash. The fire radius method indicated the most promising spatial results, where the median distance between the closest lightning and the wildfire start location was 0.83 km, followed by a 75th percentile of 1.6 km and a 95th percentile of 5.86 km. Ninety percent of the closest lightning flashes to wildfires were negative polarity. Maximum flash densities were less than 0.41 flashes km² for the 24 h period at the fire start location. The majority of lightning-initiated holdover events were observed in the Western CONUS, with a peak density in north-central Idaho. A twelve day holdover event in New Mexico was also discussed, outlining the opportunities and limitations of using lightning data to characterize wildfires.

Herbert Formayer (2021), Besides human-caused fires, lightning is the major reason for forest fire ignition in Austria. In order to analyse the causes of ignition and to characterise lightning-induced forest fires, fire records were compared with the real appearance of lightning events by using the Austrian Lightning Detection and Information System for the period from 1993 to 2010. A probability was estimated for each forest fire being caused by lightning by using a decision tree and decision matrices based on flash characteristics (e.g. amplitude, time, location). It could be shown that 15 % of documented forest fires were lightning-caused. Nearly all lightning-caused fires were found during the summer months, whereas almost 40 % of all fires occurring from June to August were naturally caused. Most lightning-caused fires took place in the south and east of Austria. Lightning fires were more frequent at higher altitudes and primarily affected conifer forests. The median burned area was lower than that for anthropogenic

forest fires. **Anna MG Barros(2008)** ,Contrasting the role of human- and lightning-caused wildfires on future fire regimes on a Central Oregon landscape,Climate change is expected to increase fire activity in many regions of the globe, but the relative role of human vs. lightning-caused ignitions on future fire regimes is unclear. We developed statistical models that account for the spatiotemporal ignition patterns by cause in the eastern slopes of the Cascades in Oregon, USA. Projected changes in energy release component from a suite of climate models were used with our model to quantify changes in frequency and extent of human and lightning-caused fires and record-breaking events based on sizes of individual fires between contemporary (2006–2015) and mid-century conditions (2031–2060). No significant change was projected for the number of human-caused fire ignitions, but we projected a 14% reduction in lightning-caused ignitions under future conditions. Mean fire sizes were 31% and 22% larger under future conditions (2031–2060) for human and lightning-caused ignitions, respectively. All but one climate model projected increased frequency of record-breaking events relative to the contemporary period, with the largest future fires being about twice the size of those of the contemporary period. This work contributes to understanding the role of lightning- and human-caused fires on future fire regimes and can help inform successful adaptation strategies in this landscape.

DC.MARTINO(2012),Fire injuries, disasters, and costs from cigarettes and cigarette lights: a global overviewSmoking is the leading cause of residential or total fire death in all eight countries with available statistics. Smoking is a leading cause of fires in many more countries. Cigarettes cause numerous fire disasters. Cigarette lights cause an estimated 100,000 U.S. and one million global, child-playing fires per year. Cigarette lights fire injuries likely rival U.S., and possibly global, cigarette fire injury numbers. Smoking causes an estimated 30% of U. S. and 10% of global fire death burdens. Smoking's estimated U.S. and global fire costs were \$6.95 (sensitivity range \$5.34-22.8) and \$27.2 (sensitivity range \$8.2-89.2) billion, respectively, in 1998 U. S.dollars.Smoking likely causes large global fire tolls. U.S. fire tolls have fallen when smoking decreased. Further reducing smoking can substantially reduce fire and disaster tolls.

D.HAMMOND (2020) ,Prevalence of behaviors related to cigarette-caused fires: a survey of Ontario smokersCigarette smoking is a leading cause of fires that cause injuries and deaths across the globe.¹ For example, in Canada between 1980 and 1999 there were 3929 smoking-material fires, which resulted in 278 injuries and 67 deaths. This translates to 7.1 injuries and 1.7 deaths for every 100 smoking-material fires.^{2,3} Therefore, the risks from

smoking-material fires represent a significant public health concern. In June 2004, New York State became the first jurisdiction in the world to regulate cigarette ignition propensity, requiring reduced ignition propensity (RIP) cigarettes in an effort to reduce the number of smoking-material fires.⁴ On 1 October 2005, Canada became the first country in the world to enact such regulations. Early results from New York State RIP law evaluations show a reduction in cigarette-caused fires with little adverse effect on consumer's smoking patterns or behaviors. The cigarette industry has argued that RIP regulations may cause a false sense of security among smokers, encouraging careless handling of cigarettes and perhaps unintentionally encouraging fire-risk behaviors like smoking in bed. There are few empirical data to support such a claim and data on the extent of such fire-risk behaviors are limited; nevertheless, regulators have cited these concerns as a potential barrier to ignition-propensity legislation. In 2006, Health Canada released results from their 2005 Canadian Tobacco Use Monitoring Survey which, for the first time, recorded fire-risk data. They reported that 12% of current smokers had smoked in bed in the past week, and 10% of smokers had fallen asleep with a lit cigarette at least once, 24% of these in the past year. **Jessica E. Halofsky (2012)** , Wildfires in the Pacific Northwest (Washington, Oregon, Idaho, and western Montana, USA) have been immense in recent years, capturing the attention of resource managers, fire scientists, and the general public. This paper synthesizes understanding of the potential effects of changing climate and fire regimes on Pacific Northwest forests, including effects on disturbance and stress interactions, forest structure and composition, and post-fire ecological processes. We frame this information in a risk assessment context, and conclude with management implications and future research needs. Changing wildfire, changing forests: the effects of climate change on fire regimes and vegetation in the Pacific Northwest, USA, Resource managers will likely be unable to affect the total area burned by fire, as this trend is driven strongly by climate. However, fuel treatments, when implemented in a spatially strategic manner, can help to decrease fire intensity and severity and improve forest resilience to fire, insects, and drought. Where fuel treatments are less effective (wetter, high-elevation, and coastal forests), managers may consider implementing fuel breaks around high-value resources. When and where post-fire planting is an option, planting different genetic stock than has been used in the past may increase seedling survival. Planting seedlings on cooler, wetter microsites may also help to increase survival. **Juarez Orozco (2021)**, Causes and Effects of Forest Fires in Tropical Rainforests: A Bibliometric Approach Despite

their humid environment, tropical rainforests are threatened by fires that negatively impact their ecological and economic value. However, fires in these ecosystems have been investigated to a far lesser degree compared with temperate or seasonally dry forests. We performed a bibliometric analysis to identify knowledge gaps in rainforest fire studies from 1981 to 2015. Through an analysis of the temporal and spatial research trends, we aimed to evaluate the main drivers that motivate investigations in this field of study. In total, we recorded 366 publications in indexed journals. Approximately 60% of these studies were conducted in four countries. The number of publications tended to increase after El Niño years. A word co-occurrence network revealed a strong relationship between land use change and fires and the role of fire in agricultural and ecosystem traits. We conclude that socioeconomic drivers, deforestation, and global climate change should be considered to gain a better understanding of the occurrence of forest fires. Further studies should include the cause, intensity, and recurrence of fires, since they determine the effects of fire on the soil and biota (fire severity). The spatiotemporal patterns of forest fires require further study to develop strategies for good agricultural production and to predict successional routes after fires. These identified gaps in the research on forest fires could guide decision-making toward the prevention of further fire expansion or at least to reduce its negative effects in tropical rain forests.

Amit Parashar (2022) , The impact of forest fire on forest biodiversity in the Indian Himalayas ,Frequent fires in the Himalayan region of Uttaranchal in the Indian Himalayas have been blamed for forest deterioration. It is true that frequent fires on large scales cause air pollution, mar quality of stream water, threaten biodiversity and spoil the aesthetics of an area, but fire plays an important role in forest ecosystem dynamics. Moreover, it is not fire, but other anthropogenic activities plus fire that are degrading the forest of the Indian Himalayas. In the present study the role of fire in shaping forest structure and composition is analysed. If fire is managed wisely it can be used as the cheapest means of forest management. For this purpose different fire characteristics are assessed together with their interrelationship with forest flora.

Stefan H. Dooer (2017) ,Global trends in wildfire and its impacts: perceptions versus realities in a changing world, Wildfire has been an important process affecting the Earth's surface and atmosphere for over 350 million years and human societies have coexisted with fire since their emergence. Yet many consider wildfire as an accelerating problem, with widely held perceptions both in the media and scientific papers of increasing fire occurrence, severity and resulting losses. However, important exceptions aside,

the quantitative evidence available does not support these perceived overall trends. Instead, global area burned appears to have overall declined over past decades, and there is increasing evidence that there is less fire in the global landscape today than centuries ago. Regarding fire severity, limited data are available. For the western USA, they indicate little change overall, and also that area burned at high severity has overall declined compared to pre-European settlement. Direct fatalities from fire and economic losses also show no clear trends over the past three decades. Trends in indirect impacts, such as health problems from smoke or disruption to social functioning, remain insufficiently quantified to be examined. Global predictions for increased fire under a warming climate highlight the already urgent need for a more sustainable coexistence with fire. The data evaluation presented here aims to contribute to this by reducing misconceptions and facilitating a more informed understanding of the realities of global fire.

Sarah Moura Batista dos Santos (2020) ,Research on Wildfires and Remote Sensing in the Last Three Decades: A Bibliometric Analysis,Evaluating the impact of wildland fires on landscapes, a pursuit increasingly supported by remote sensing techniques, requires an understanding of wildfire dynamics. This research highlights the main insights from the literature related to “wildfires” and “remote sensing” published between 1991 and 2020. The Scopus database was used as a source of information regarding scientific production on these topics, after which bibliometric tools were employed as a means through which to reveal patterns in this network of journals, terms, countries, and authors. The results suggest that these subject areas have undergone significant developments in the last three decades, having been the focus of growing interest among the scientific community. The most relevant contributions to the literature available have been made by researchers working in the areas of earth and environmental sciences (54% of the publications), primarily in the United States, China, Spain, and Canada. Research trends in this field have undergone a significant evolution in recent decades, explained by the strong relationship between the technological evolution of detection methods and remote sensing data acquisition.

Anita K. (2013) ,Forest fire in India: A review of the knowledge base ,Forest fire has profound impacts on atmospheric chemistry, biogeochemical cycling and ecosystem structure. This feedback interaction may be hastened in climate change scenarios. In view of this, the present day knowledge about the forest fire condition in India has been reviewed. Operational monitoring, geospatial modeling and climate change uncertainties are discussed. Indicators for forest fire assessment and the role of geoinformatics tools in

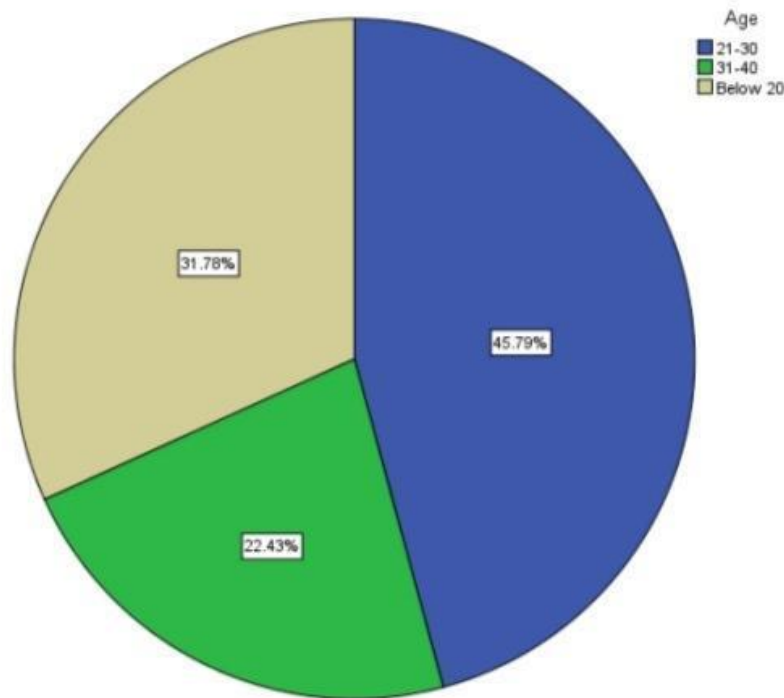
developing those parameters are identified. The need for developing an adaptive management strategy from the existing experience is emphasized, and specific points are recommended sector-wise with short- and long-term visions. **Miranda AI. (2018)** , Forest fires research: beyond burnt area statistics ,During the last few years extreme fire occurrences in distant parts of the globe such as Australia, Russia and United States of America (USA) have increased global awareness and concern about the destructive power and profound consequences of forest fires. The complexity and extent of the impacts of forest fires, however, go far beyond the statistics provided by official reports and media on, for example, total burnt area, number of destroyed houses, or human casualties. The World Health Organization (WHO, 2007) has identified forest fires, and particularly those occurring close to urban areas, as one of the major threats to public health security in the 21st century, stressing the need for politicians, experts and stakeholders to recognize the magnitude and multidimensionality of the impacts of forest fires and the resulting risks. The WHO has also warned that effective measures of risk and crisis management are urgently needed. Intended to promote a more interdisciplinary approach to the multiple and interrelated factors influencing and potentiating the occurrence, severity and impacts of forest fires, the Centre for Environmental and Marine Studies (CESAM) organized an International Workshop entitled “Forest fires research - beyond burnt area statistics”. On May 26 2010 at the University of Aveiro, it brought together a variety of experts, professionals and students from Portugal, Spain and the USA. This booklet aims to share the main contents of the presentations that were given by national and international scientists during the workshop. It is organized according to four different stages in relation to the occurrence of forest fires: before, during, after and under future conditions. The different chapters address a wide range of distinct but clearly interrelated research topics, namely: fire prevention; fuel management; fire behaviour and suppression; smoke emissions, air pollution and human exposure; ecosystem functioning and biodiversity; hydrology and soil erosion; ecological restoration; ecotoxicology; socio- economic factors; and climate change impacts.

METHODOLOGY:

The study was based on a descriptive method of research. The data was collected from respondents, students, friends and family all over Chennai by adopting the convenience sampling method and the sample size was 206. The tool used for the study was a structured questionnaire google forms. The independent variables included in this study was age, educational qualifications and occupations. The dependant variable considered for this study was the issue of forest fires and its hazardous effects all over the environment. SPSS software was used for analysing the collected data.

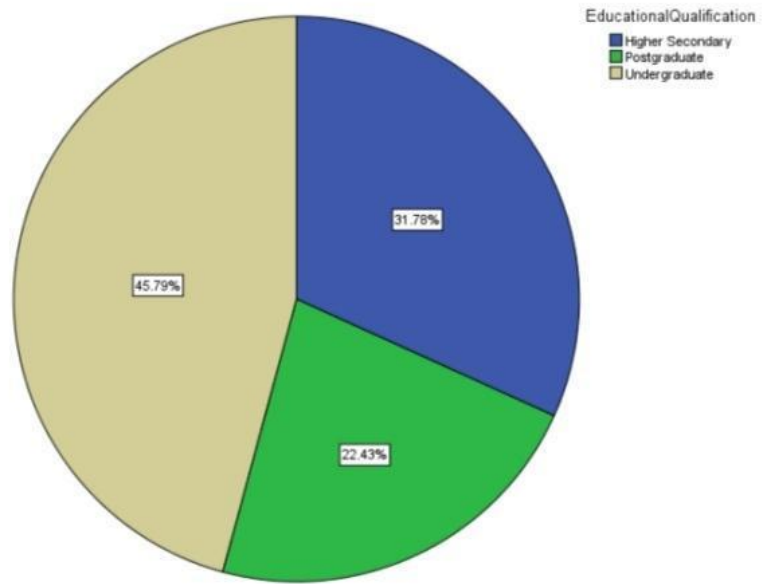
ANALYSIS :

FIGURE 1:



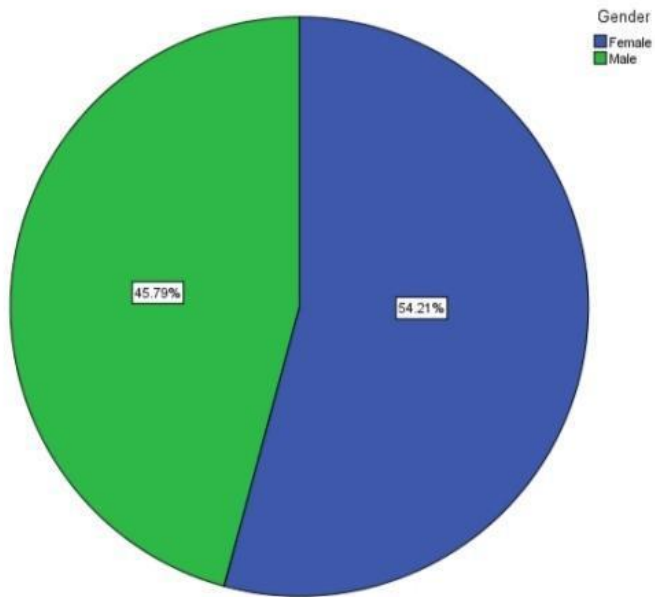
LEGEND : This represents the percentage analysis of the age of our sample respondents.

FIGURE 2 :



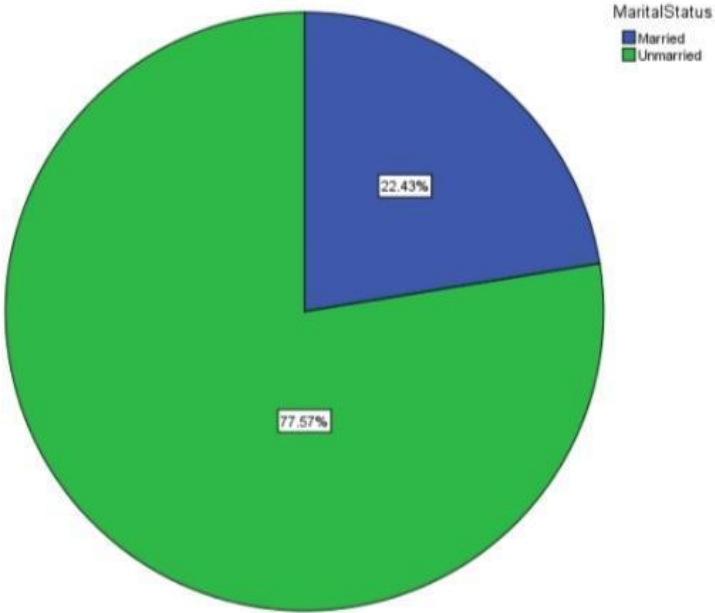
LEGEND : This represents a pie chart percentage analysis of the educational qualification of the sample respondents .

FIGURE 3:



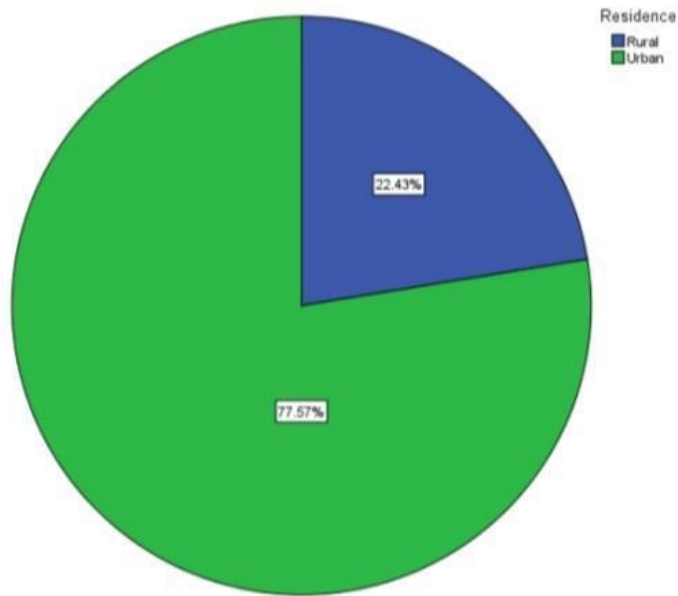
LEGEND : This represents a percentage analysis of the gender distribution of our sample respondents .

FIGURE 4:



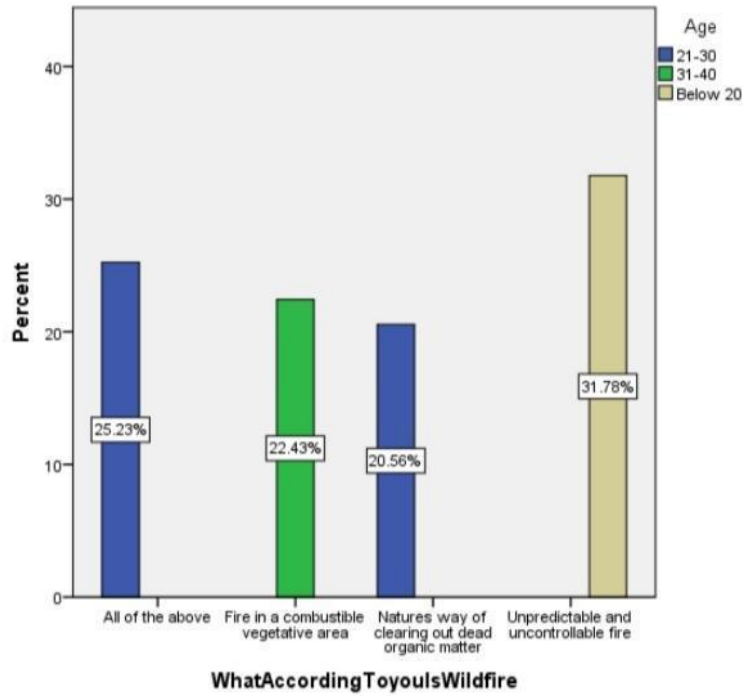
LEGEND: Figure 4 represents a percentage analysis of the marital status of our sample respondents .

FIGURE 5:



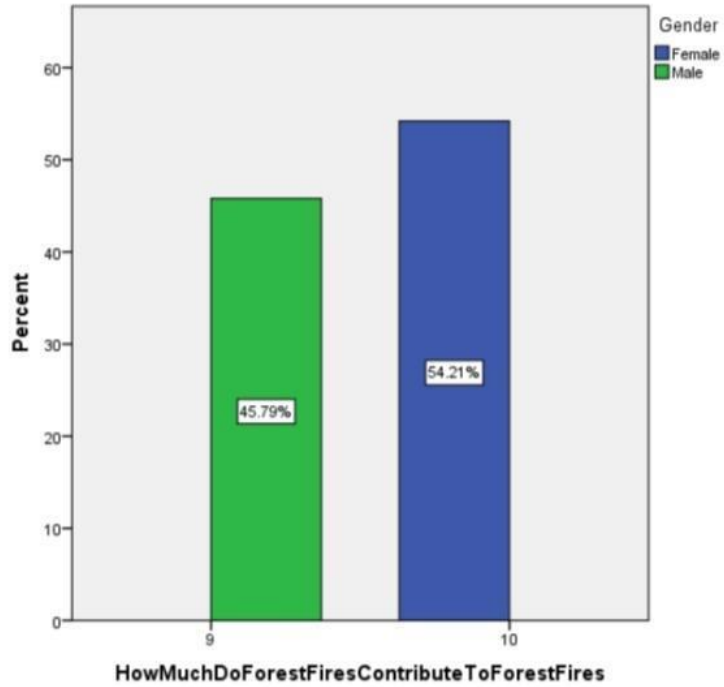
LEGEND : Figure 5 represents a pie chart percentage analysis of the residence of the sample respondents.

FIGURE 6 :



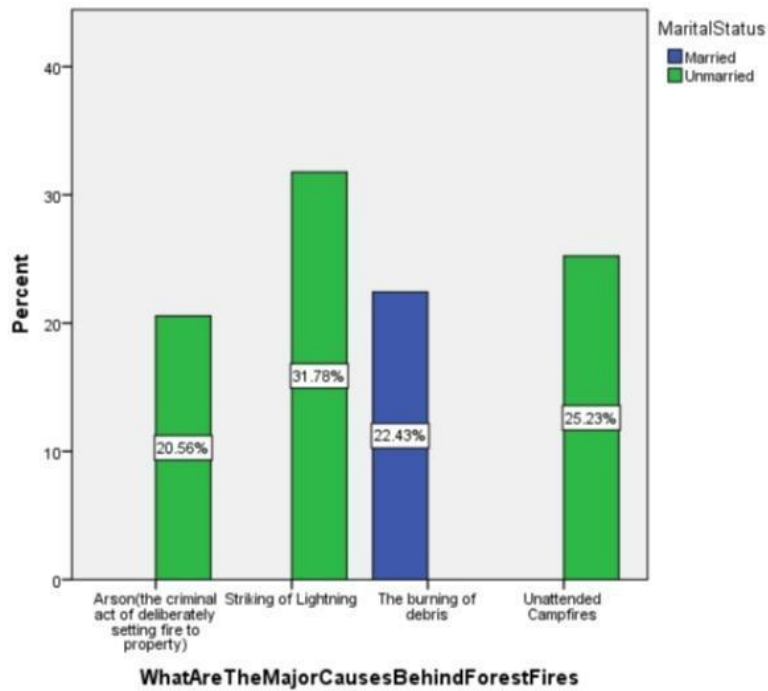
LEGEND: This is a clustered bar chart drawing an analysis between what according to the age of sample respondents does wildfire mean .

FIGURE 7 :



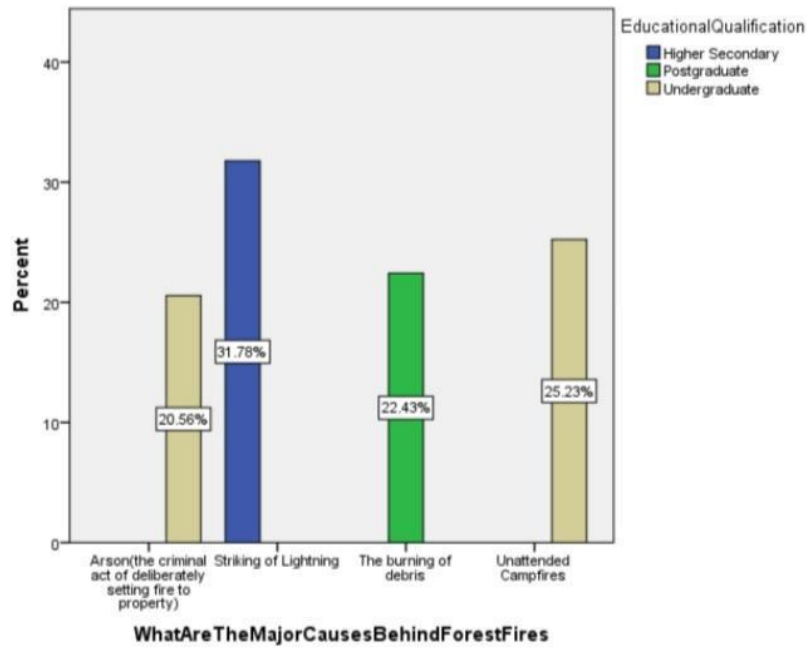
LEGEND : This is a cluster bar analysing how much forest fires contribute to pollution in contrast with the gender of my sample respondents .

FIGURE 8 :



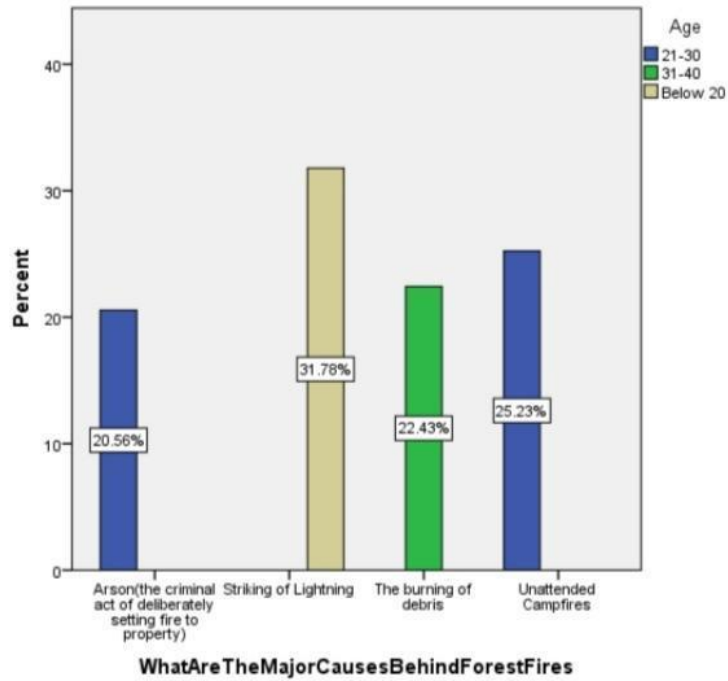
LEGEND : This is a clustered bar chart analysing what are the major causes behind forest fires , with the marital status of my sample respondents .

FIGURE 9 :



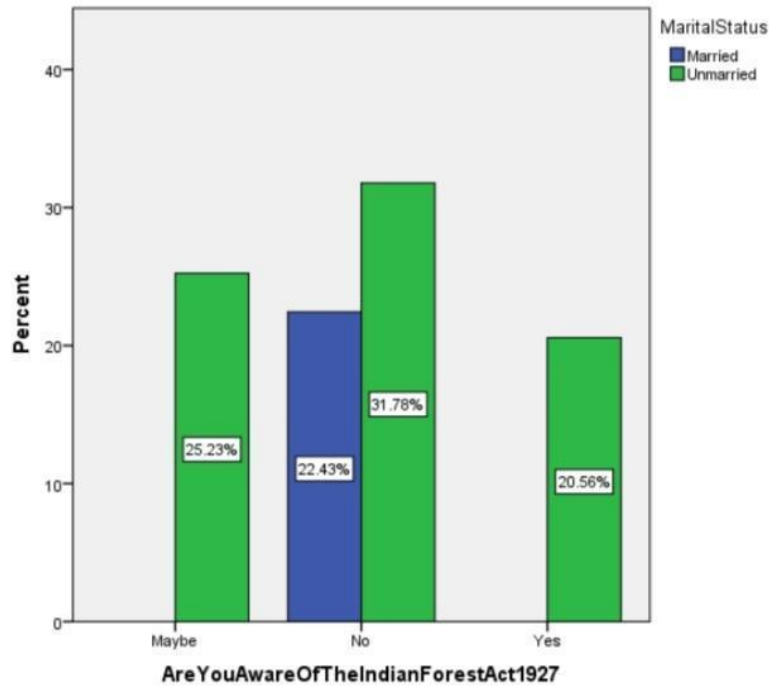
LEGEND : This is a clustered bar chart contemplating what are the major causes behind forest with the educational qualification of sample respondents .

FIGURE 10 :



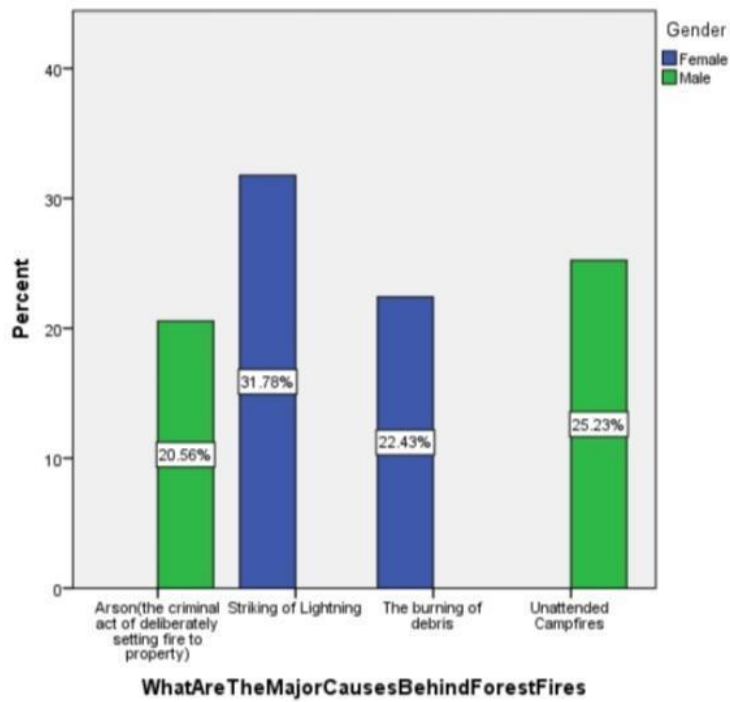
LEGEND : This is an clustered bar chart analysis of what are the major causes behind forest fires with the residence of my sample respondents .

FIGURE 11 :



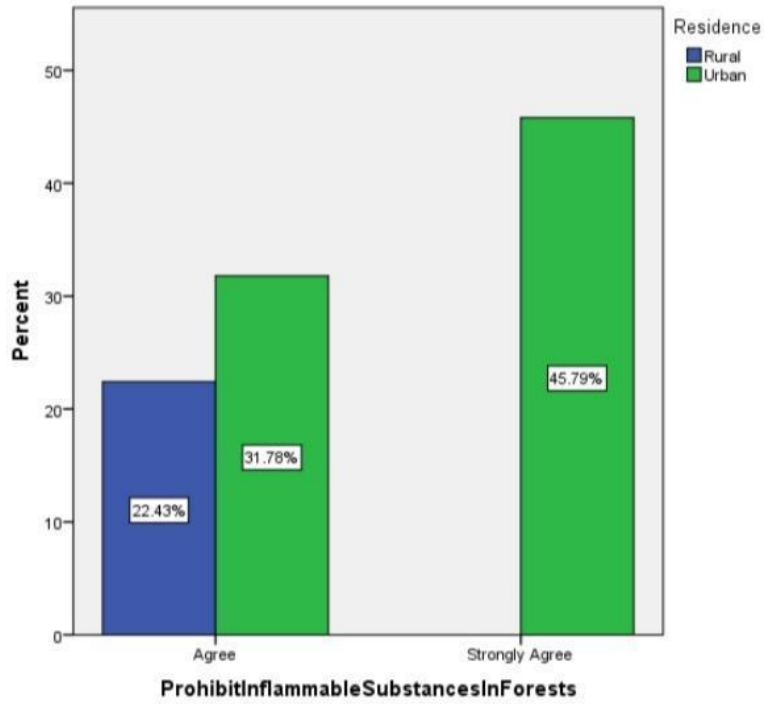
LEGEND:This is a clustered bar analyzing whether people are aware of the Indian forest act 2017, with the marital status of my sample respondents .

FIGURE 12:



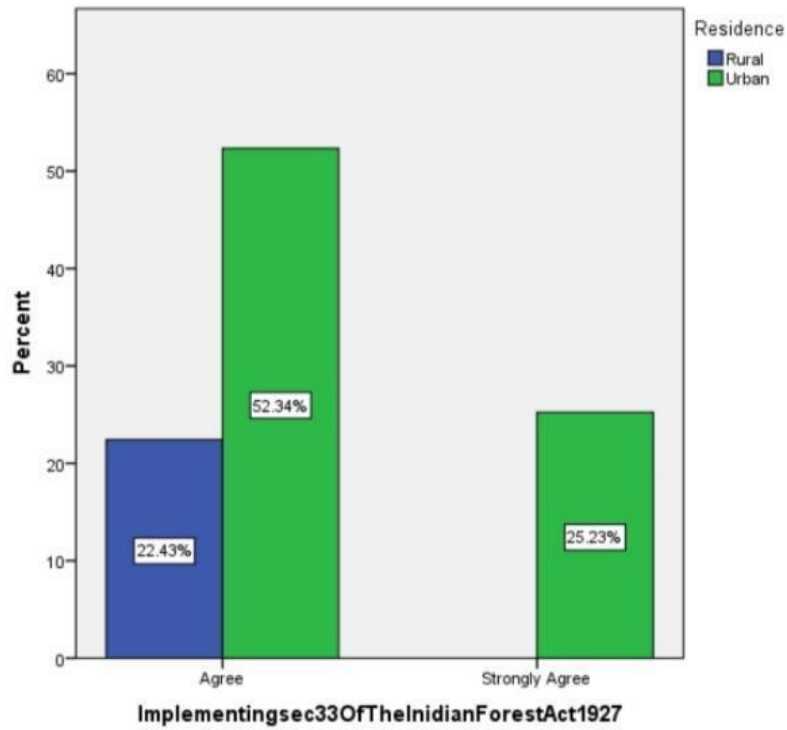
LEGEND : This is an clustered bar chart analysis of what are the major causes behind forest fires with the gender of my sample respondents .

FIGURE 13:



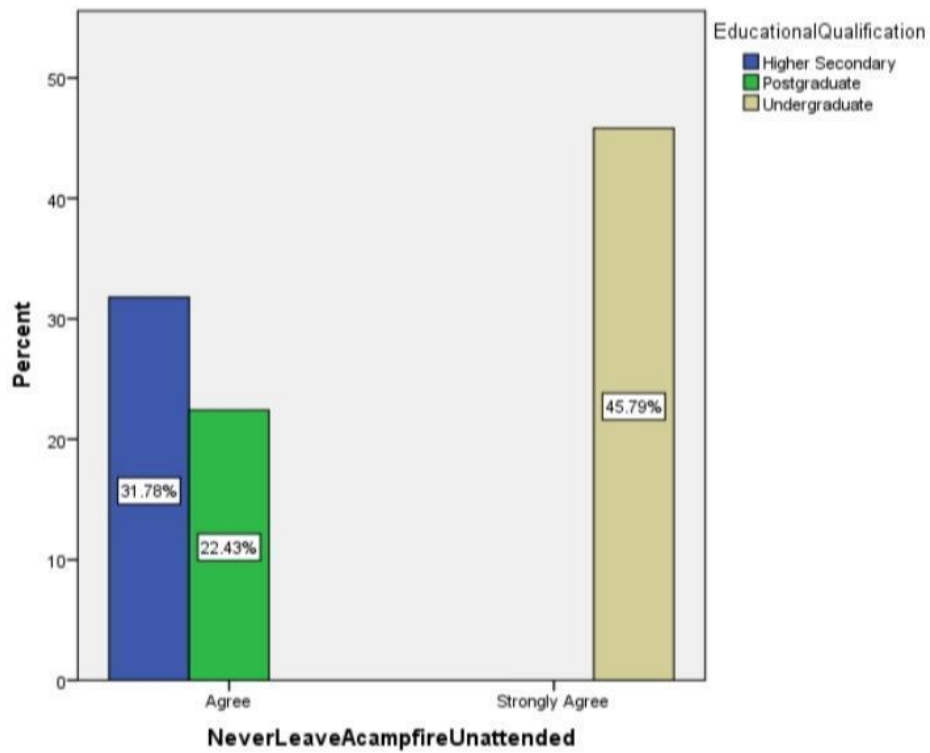
LEGEND:. This is a clustered bar analysis of will prohibiting inflammable substances in forests help prevent wildfires ,with the residence of my sample respondents .

FIGURE 14 :



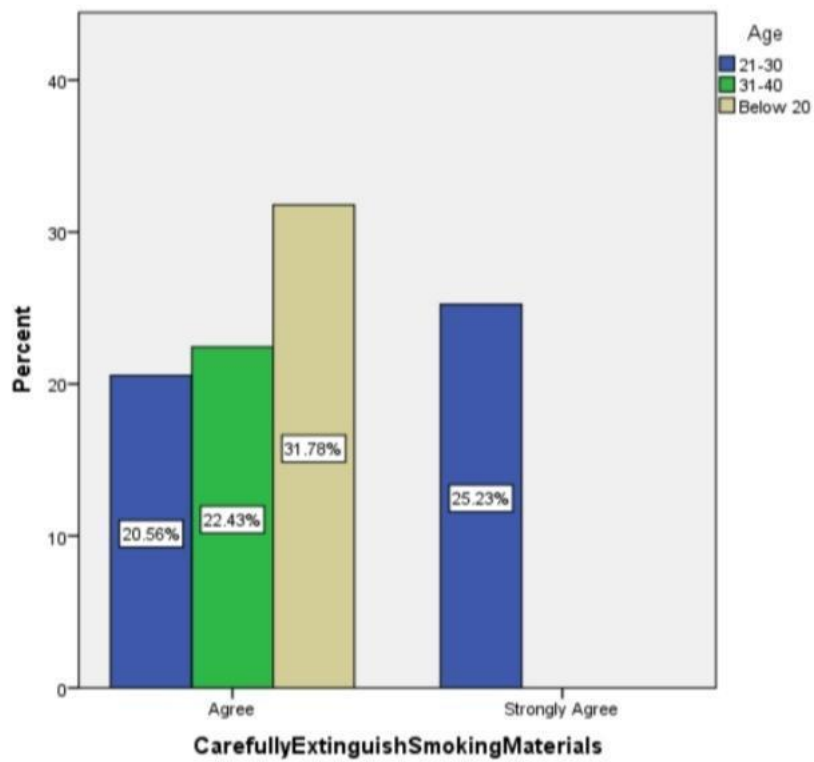
LEGEND: This is a clustered bar chart implementing sec -33 of the Indian forest act -1927 with the residence of my sample respondents .

FIGURE 15 :



LEGEND : This is a clustered bar chart by the educational qualification of my sample respondents on how never leaving a campfire unattended will prevent wildfires.

FIGURE 16 :



LEGEND : This is a clustered bar chart by the educational qualification of my sample respondents on how carefully extinguishing smoking materials will prevent wildfires.

FIGURE 17 :

Age * WhatAccordingToyouIsWildfire

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	214.000 ^a	6	.000
Likelihood Ratio	226.248	6	.000
N of Valid Cases	107		
a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.93.			

LEGEND : This Chi Square 1 cell has elected count less than 5 . The minimum expected count is 4.93

Age * WhatAreTheMajorCausesBehindForestFires

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	214.000 ^a	6	.000
Likelihood Ratio	226.248	6	.000
N of Valid Cases	107		
a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.93.			

LEGEND : This Chi Square 1 cell has elected count less than 5 . The minimum expected count is 4.93

FIGURE 19 :

Age * NeverLeaveAcampfireUnattended

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	107.000 ^a	2	.000
Likelihood Ratio	147.576	2	.000
N of Valid Cases	107		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.99.

LEGEND : In this CHI SQUARE 0 cells have expected count less than 5 . The minimum expected count is 10.99

FIGURE 20 :

Gender * WhatAccordingToyouIsWildfire

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	107.000 ^a	3	.000
Likelihood Ratio	147.576	3	.000
N of Valid Cases	107		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.07.			

LEGEND :In this CHI SQUARE 0 cells have expected count less than 5 . The minimum expected count is 10.07

FIGURE 21 :

Gender * WhatAreTheMajorCausesBehindForestFires

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	107.000 ^a	3	.000
Likelihood Ratio	147.576	3	.000
N of Valid Cases	107		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.07.			

LEGEND: In this CHI SQUARE 0 cells have expected count less than 5 . The minimum expected count is 10.07

FIGURE 22 :

Gender * NeverLeaveAcampfireUnattended

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	107.000 ^a	1	.000		
Continuity Correction ^b	103.009	1	.000		
Likelihood Ratio	147.576	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	107				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 22.44.					
b. Computed only for a 2x2 table					

LEGEND: In this CHI SQUARE we have expected to count less than 5 . The minimum expected count is 22.44 .

FIGURE 23:

EducationalQualification * WhatAccordingToyouIsWildfire

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	214.000 ^a	6	.000
Likelihood Ratio	226.248	6	.000
N of Valid Cases	107		
a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.93.			

LEGEND: In this CHI SQUARE 1 cell has expected count less than 5 . The minimum expected count is 4.93.

RESULTS:

Figure 1 This represents the percentage analysis of the age of our sample respondents. **Figure 2** This represents a pie chart percentage analysis of the educational qualification of the sample respondents . **Figure 3** This represents a percentage analysis of the gender distribution of our sample respondents . **Figure 4** represents a percentage analysis of the marital status of our sample respondents . **Figure 5** represents a pie chart percentage analysis of the residence of the sample respondents. **Figure 6** This is a clustered bar chart drawing an analysis between what according to the age of sample respondents does wildfire mean . **Figure 7** This is a cluster bar analysing how much forest fires contribute to pollution in contrast with the gender of my sample respondents . **Figure 8** This is a clustered bar chart analysing what are the major causes behind forest fires , with the marital status of my sample respondents . **Figure 9** This is a clustered bar

chart contemplating what are the major causes behind forest with the educational qualification of sample respondents .**Figure 10** This is an clustered bar chart analysis of what are the major causes behind forest fires with the residence of my sample respondents .**Figure 11** This is an clustered bar chart analysis of what are the major causes behind forest fires with the age of my sample respondents . **Figure 12** This is a clustered bar analyzing whether people are aware of the Indian forest act 2017, with the marital status of my sample respondents . **Figure 13** This is an clustered bar chart analysis of what are the major causes behind forest fires with the gender of my sample respondents .**Figure 14** This is a clustered bar analysis of will prohibiting inflammable substances in forests help prevent wildfires ,with the residence of my sample respondents . **Figure 15** This is a clustered bar chart implementing sec -33 of the Indian forest act -1927 with the residence of my sample respondents .**Figure 16** This is a clustered bar chart by the educational qualification of my sample respondents on how never leaving a campfire unattended will prevent wildfires. **Figure 17** This Chi Square 1 cell has elected count less than 5 . The minimum expected count is 4.93 . **Figure 18** This Chi Square 1 cell has elected count less than 5 . The minimum expected count is 4.93 . **Figure 19** In this CHI SQUARE 0 cells have expected count less than 5 . The minimum expected count is 10.99 .**Figure 20** In this CHI SQUARE 0 cells have expected count less than 5 . The minimum expected count is 10.07. **Figure 21** In this CHI SQUARE 0 cells have expected count less than 5 . The minimum expected count is 10.07 . **Figure 22** In this CHI SQUARE we have expected to count less than 5.The minimum expected count is 22.44 .**Figure 23** In this CHI SQUARE 1 cell has expected count less than 5.The minimum expected count is 4.93.

DISCUSSION:

Figure 1 This represents the percentage analysis of the age of our sample respondents. **Figure 2** This represents a pie chart percentage analysis of the educational qualification of the sample respondents . **Figure 3** This represents a percentage analysis of the gender distribution of our sample respondents . **Figure 4** represents a percentage analysis of the marital status of our sample respondents . **Figure 5** represents a pie chart percentage analysis of the residence of the sample respondents. **Figure 6** This is a clustered bar chart drawing an analysis between what according to the age of sample respondents does wildfire mean . **Figure 7** This is a cluster bar

analysing how much forest fires contribute to pollution in contrast with the gender of my sample respondents majority respondents agree that forest fires majorly contribute to pollution. **Figure 8** This is a clustered bar chart analysing what are the major causes behind forest fires , with the marital status of my sample respondents , where majority respondents believe that Lightning and unattended campfires are the main causes. **Figure 9** This is a clustered bar chart contemplating what are the major causes behind forest with the educational qualification of sample respondents .**Figure 10** This is an clustered bar chart analysis of what are the major causes behind forest fires with the residence of my sample respondents .**Figure 11** This is an clustered bar chart analysis of what are the major causes behind forest fires with the age of my sample respondents . **Figure 12** This is a clustered bar analyzing whether people are aware of the Indian forest act 2017, with the marital status of my sample respondents , Amorite respondents do not seem to be aware of the Indian forest Act . **Figure 13** This is an clustered bar chart analysis of what are the major causes behind forest fires with the gender of my sample respondents .**Figure 14** This is a clustered bar analysis of will prohibiting inflammable substances in forests help prevent wildfires ,with the residence of my sample respondents , majority respondents believe it will help prevent the same . **Figure 15** This is a clustered bar chart implementing sec -33 of the Indian forest act -1927 with the residence of my sample respondents, majority respondents agree to its implementation .**Figure 16** This is a clustered bar chart by the educational qualification of my sample respondents on how never leaving a campfire unattended will prevent wildfires. **Figure 17** This Chi Square 1 cell has elected count less than 5 . The minimum expected count is 4.93, hence leaving us at a value less than 0.05 due to which we will accept the null hypothesis and reject the alternative hypothesis. Figure 18 This ChiSquare 1 cell has elected count less than 5. The minimum expected count is 4.93. **Figure 19** In this CHI SQUARE 0 cells have expected count less than 5 . The minimum expected count is 10.99 .**Figure 20** In this CHI SQUARE 0 cells have expected count less than 5. The minimum expected count is 10.07. **Figure 21** In this CHI SQUARE 0 cells have expected count less than 5. The minimum expected count is 10.07. **Figure 22** In this CHI SQUARE we have expected to count less than 5. The minimum expected count is 22.44 .**Figure 23** In this CHI SQUARE 1 cell has expected count less than 5. The minimum expected count is 4.93.

LIMITATIONS:

The limitations of my study are the limited jurisdiction of the collection of responses from the area of Poonamallee bus depot. My Descriptive study couldn't be used to establish cause and effect relationships. All respondents were not truthful when answering survey questions or may give socially desirable responses. The choice and wording of my questions on my questionnaire influenced the descriptive findings. Depending on the type and size of sample, the findings may not be generalizable or produce an accurate description of the population of interest .

SUGGESTION :

Forests being the literal source of fuel , are surrounded with forest fuels and are hence prone to flammable substances catching up on fire , This is why forest fires can't go extinct or put to a halt forever , it can only be tamed and moderated by improving the forest technology and prediction analysis . I'd suggest the government bring up harsher penal provisions to create awareness among the public that disturbing the environment's balance is as serious as committing a criminal offence .

CONCLUSION:

Forest fire continues to destroy large areas of forests in the Himalayas and globally, degrading ecosystem services, causing biodiversity loss, and jeopardizing livelihood sources. Forest fires also contribute to global warming mostly by releasing GHGS from burning biomass and associated deterioration of soils. These impacts are expected to worsen from increasing fire incidences partly exacerbated by climate change. Despite these challenges, forest fire management in the region is limited by lack of proper policy, capacity building, and mechanized tools. This is further complicated by very rugged terrain and hostile climatic conditions including strong winds that make fire management very difficult. This situation calls for a dynamic approach to fire management including a comprehensive policy guideline in each country. Such a guideline must be comprehensive enough to include diverse fire management interventions by a diverse group of people including the foresters, the armed forces, and the communities. These circumstances calls for an integrated approach to forest fire management and climate resilient adaptation pathways fits the bill. Climate resilient adaptation pathways can transform current

strategies and policies through a fundamental change in a system, its nature, and/or location that can occur in human institutions, technological and biological systems. However, such changes must be deeply rooted into empirical knowledge generated from robust scientific knowledge about forest fire dynamics, cause and effects under climate change scenarios. This review shows that such research is scarce in the fragile Himalayan region. The review also highlights the need to understand forest fire, response mechanism, and project risks under global environmental changes in the region to carve out climate resilient adaptation pathways that will guide policy and strategies to guarantee some level of assurance to achieve sustainable development goals. Based on the findings, this review recommends scientific studies to Evaluate the effectiveness of the current system and capacity of forest fire management at country and landscape levels. Develop and construct climate resilient adaptive indicators of forest fires including other climatic disasters such as drought, flooding, landslide, and pest and diseases. In addition, the review also points to the need for a more coordinated approach at country and community level to create awareness about forest fires and their ecological and social impacts.

REFERENCE :

- David L. Peterson (2020), Changing wildfire, ISSN-133456899 changing forests shorturl.at/aiTUX .
- Anita K(2009),Forest fire in India ISSN-322567345 : shorturl.at/ftY16
- Humberto Ambarim(2011), Forest fires research ISSN-123654876 : shorturl.at/demrY
- Sas Biswas(2019),The impact of forest fire on forest biodiversity in the Indian Subcontinent ISSN-435142332 .shorturl.at/FLMPU
- Jianbang Gan(2016), Special Issue "Climate Change and Forest Fire",Forest fire, though an integrative part of forest ecosystems ISSN -998721123 , shorturl.at/bdJRU
- Sarah Moura Batista dos Santos(2014),Research on Wildfires and Remote Sensing in the Last Three Decades ISSN-114238631: shorturl.at/fmns8
- A.PARK Williams (2021),Impact of anthropogenic climate change on wildfire across western US forests ISSN -126365765 shorturl.at/aktU6 .

- Yang Shu (2012), Influence of Climatic Factors on Lightning Fires in the Primeval Forest Region of the Northern Daxing'an Mountains, China Forest fires ISSN -768421322 .shorturl.at/GJLMV
- Christopher J. Shultz (2017) Spatial, Temporal and Electrical Characteristics of Lightning in Reported Lightning-Initiated Wildfire Events ISSN-123654327.shorturl.at/ADKLU
- Herbert Formayer (2021), Besides human-caused fires, lightning is the major reason for forest fire ignition in Austria ISSN -435672899.shorturl.at/kLOX2
- Anna MG Barros(2008) , Contrasting the role of human- and lightning-caused wildfires on future fire ISSN-345678132 shorturl.at/EHI03
- DC.MARTINO(2012), Fire injuries, disasters, and costs from cigarettes and cigarette lights ISSN -132654789: shorturl.at/LNY05
- D.HAMMOND (2020) , Prevalence of behaviors related to cigarette-caused fires: a survey of Ontario smokers Cigarette smoking is a leading cause of fires that cause injuries and deaths across the globe ISSN-456987497:shorturl.at/giN69
- Jessica E. Halofsky (2012) , Wildfires in the Pacific Northwest (Washington, Oregon, Idaho, and western Montana, USA) have been immense in recent years, capturing the attention of resource managers, fire scientists, and the general public ISSN 155243671.shorturl.at/IQVZ8